Regn. no. 720 of 1929 F. 56

Sectt. Library Copy

ADMINISTRATION REPORT

OF THE

INDIAN STORES DEPARTMENT

FOR THE YEAR

1928-29

14665

LAHORE

CALCUTTA: GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1929

Price Rs. 3-4 or 5s. 9d.

ADMINISTRATION REPORT

OF THE

INDIAN STORES DEPARTMENT

FOR THE YEAR

1928-29

CALCUTTA: GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1929

Government of India Publications are obtainable from the Government of India Central Publication Branch, 3, Government Place, West, Calcutta, and from the following Agents :—

EUROPE.

OFFICE OF THE HIGH COMMISSIONER FOR INDIA,
42, GROSVENOR GARDENS, LONDON, S. W. 1.

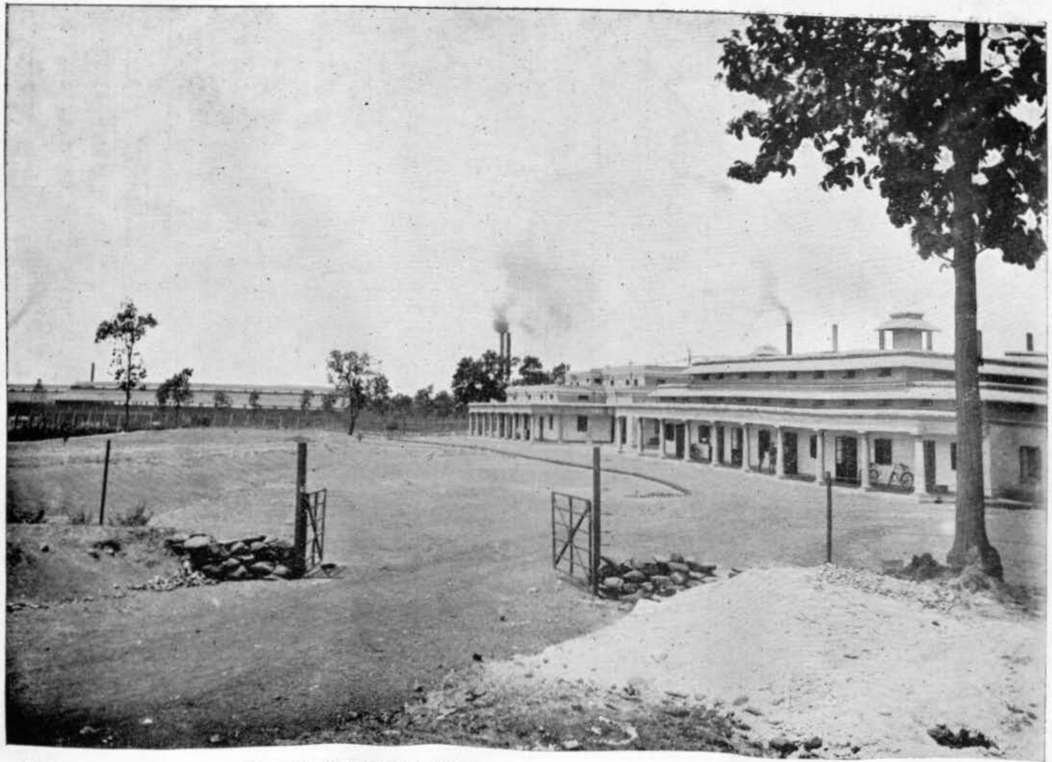
And at all Booksellers.

INDIA AND CEYLON.

Provincial Book Depôts :

MADRAS :—Superintendent, Government Press, Mount Road, Madras.
BOMBAY :—Superintendent, Government Book Depôt, Town Hall, Bombay.
SIND :—Library attached to the Office of the Commissioner in Sind, Karachi.
BENGAL :—Bengal Secretariat Book Depôt, Writers' Buildings, Room No. 1, Ground Floor, Calcutta.
UNITED PROVINCES OF AGRA AND OUDH :—Superintendent of Government Press, United Provinces of Agra and Oudh, Allahabad.
PUNJAB :—Superintendent, Government Printing, Punjab, Lahore.
BURMA :—Superintendent, Government Printing, Burma, Rangoon.
CENTRAL PROVINCES AND BERAR :—Superintendent, Government Printing, Central Provinces, Nagpur.
ASSAM :—Superintendent, Assam Secretariat Press, Shillong.
BIHAR AND ORISSA :—Superintendent, Government Printing, Bihar and Orissa, P. O. Gulzarbagh, Patna.
COORG :—Office of the Chief Commissioner of Coorg, Bangalore.
NORTH-WEST FRONTIER PROVINCE :—Manager, Government Printing and Stationery, Peshawar.

Thacker, Spink & Co., Calcutta and Simla.
W. Newman & Co., Ltd., Calcutta.
R. Cambray & Co., Calcutta.
S. K. Lahiri & Co., Calcutta.
The Indian School Supply Depôt, 309, Bow Bazar Street, Calcutta.
Butterworth & Co. (India), Ltd., Calcutta.
Rai M. C. Sarcar Bahadur & Sons, 90-2A, Harrison Road, Calcutta.
Standard Literature Company, Limited, Calcutta.
Association Press, Calcutta.
Chukervertty, Chatterjee & Co., Ltd., 13, College Square, Calcutta.
The Book Company, Calcutta.
James Murray & Co., 12, Government Place, Calcutta. (For Meteorological Publications only.)
Ray Choudhury & Co., 68-5, Asutosh Mukherji Road, Calcutta.
Scientific Publishing Co., 9, Taltolla Lane, Calcutta.
Chatterjee & Co., 204, Cornwallis Street, Calcutta.
Standard Law Book Society, 8-2, Hastings Street, Calcutta.
The Hindu Library, 3, Nandalal Mullick Lane, Calcutta.
B. C. Basak, Esq., Proprietor, Albert Library, Dacca.
Mitra Brothers, Rajshahi.
Higginbothams, Madras.
Rochouse and Sons, Madras.
G. A. Nateson & Co., Publishers, George Town, Madras.
Theosophical Publishing House, Adyar, Madras.
P. Varadachary & Co., Madras.
S. Murthy & Co., Madras.
Bright & Co., Trivandrum.
The Booklover's Resort, Taikad, Trivandrum, South India.
E. M. Gopalakrishna Kone, Pudumandapam, Madura.
Central Book Depôt, Madura.
Vijapur & Co., Vizagapatam.
Thacker & Co., Ltd., Bombay.
D. B. Taraporevala Sons & Co., Bombay.
Sunder Pandurang, Bombay.
Ram Chandra Govind & Sons, Kalbadevi Road, Bombay.
N. M. Tripathi & Co., Booksellers, Princess Street, Kalbadevi Road, Bombay.
New and Secondhand Bookshop, Kalbadevi Road, Bombay.
Mrs. Radhabai Atmaram Sagoon, Kalbadevi Road, Bombay.
J. M. Pandia & Co., Bombay.
Gatulal & Co., Bombay.
A. H. Wheeler & Co., Allahabad, Calcutta and Bombay.
S. Govind & Co., Sandhurst Road, Girgaum, Bombay.
Proprietor, New Kitabkhana, Poona.
The Manager, Oriental Book Supplying Agency, 15, Shukrawar, Poona City.
Rama Krishna Bros., Opposite Visrambag, Poona City.
S. P. Bookstall, 21, Budhwar, Poona.
Mangaldas & Sons, Booksellers and Publishers, Bhaga Talao, Surat.
The Standard Book and Stationery Co., 32-33, Arbab Road, Peshawar.
R. B. Umadikar & Co., The Bharat Book Depôt, Dharwar.
The Standard Bookstall, Karachi, Quetta, Delhi, Murree and Rawalpindi.
The Karachi Book Depôt, Elphinstone Street, Camp, Karachi.
The English Bookstall, Karachi.
The Standard Bookstall, Quetta.
U. P. Malhotra & Co., Quetta.
J. Ray & Sons, 43, K. & L., Edwardes Road, Rawalpindi, Murree and Lahore.
The Standard Book Depôt, Lahore, Nainital, Mussoorie, Dalhousie, Ambala Cantonment and Delhi.
N. B. Mathur, Supdt., Nazir Kanun Hind Press, Allahabad.
The North India Christian Tract and Book Society, 18, Clive Road, Allahabad.
Ram Dayal Agarwala, 184, Katra, Allahabad.
The Indian Army Book Depôt, Juhi, Cawnpore.
The Indian Army Book Depôt, Jullundur City.
Manager, Newal Kishore Press, Lucknow.
The Upper India Publishing House, Ltd., Literature Palace, Ammuddaula Park, Lucknow.
Rai Sahib M. Gulab Singh & Sons, Mufid-i-Am Press, Lahore and Allahabad.
Rama Krishna & Sons, Booksellers, Anarkali, Lahore.
Puri Brothers, Booksellers and Publishers, Katcheri Road, Lahore.
The Tilak School Bookshop, Lahore.
The Standard Bookstall, Lahore.
The Proprietor, Punjab Sanskrit Book Depôt, Saidmitha Street, Lahore.
The Insurance Publicity Co., Ltd., Lahore.
The Punjab Religious Book Society, Lahore.
Manager of the Imperial Book Depôt, 63, Chandney Chawk Street, Delhi.
Fono Book Agency, New Delhi.
Oxford Book and Stationery Comapny, Delhi & Calcutta.
Supdt., American Baptist Mission Press, Rangoon.
The Modern Publishing House, Ltd., 30, Phayre Street, Rangoon.
Burma Book Club, Ltd., Rangoon.
Manager, the "Hitavada," Nagpur.
Bhisey Brothers, Booksellers and Stationers, Sitabaldi, Nagpur.
S. C. Talukdar, Proprietor, Students & Co., Cooch Behar.
The Manager, Ceylon Observer, Colombo.
The Manager, The Indian Book Shop, Benares City.
Nandkishore & Bros., Chowk, Benares City.
The Srivilliputtur Co-operatve Trading Union, Ltd., Srivilliputtur (S. I. R.).
Raghunath Prosad & Sons, Patna City.
The Students' Emporium, Patna.
K. L. Mathur & Bros., Guzri, Patna City.
Dandekar Brothers, Indore City.
Pushtakalaya Sahayak Sahakari, Ltd., Baroda.
The Hyderabad Book Depôt, Chaderghat, Hyderabad (Deccan).
Thakur & Co., Amraoti.
S. Krishnaswami & Co., Teppakulam P. O., Trichinopoly Fort.
National College Teachers Union Book Depôt, Trichinopoly.



THE NEW OFFICE AND LABORATORY OF THE METALLURGICAL INSPECTORATE, JAMSHEDPUR.

TABLE OF CONTENTS.

PARTICULARS.

REPORT.

APPENDICES.

ILLUSTRATIONS.

Administration Report of the Indian Stores Department for the year 1928-29.

CHAPTER I.

Summary.

1. **General.**—The year 1928-29 opened promisingly for the Indian Stores Department. The record of the previous years had been one of continuous progress, and all the indications at hand pointed to a further and a relatively greater measure of development during this year. These anticipations were to a large extent realised by the actual entrustment to the Department of a larger volume of business than in any preceding year, but it was prevented from securing the full effect of this advance by the unrest in the industrial life of the country which prevailed during a portion of the year 1928.

2. **Activities of the Purchase Branch.**—There was a decline, as compared with the year 1927-28, in the value of the contracts which were entered into for the supply of stores during the year, but this is attributable entirely to an alteration of the method of computing the value of the contracts entered into during a financial year and to the effectuation of more economical purchases, owing partly to the downward trend of market prices and partly to the purchase of cheaper substitutes in place of articles previously bought, not to any withdrawal of business from the Department. On the contrary, it was, as mentioned above, entrusted with more work during this year than in any previous year of its history. The fullest possible advantage was taken of the resources which India possesses in meeting the demands placed on the Department, and, as a result, a large quantity of business was placed with Indian manufacturers. All but a very small fraction of the textile goods purchased were either of purely Indian origin and manufacture or were manufactured either wholly or partly in India from imported materials. The proportion of Indian manufactures was necessarily smaller in the case of engineering, hardware and miscellaneous stores, but nevertheless a greater quantity of these classes of stores was obtained than in any previous year. The larger resort to Indian resources, which is important in itself, gains in interest from the fact that it was responsible for over 60 per cent. of the large direct savings in cost, amounting to Rs. 3,56,190, which were effected during the year. The total amount of the savings was nearly equivalent to the aggregate amount of the charge payable to the Department for the purchase, excluding inspection, of the entire quantity of stores for which contracts were placed by the Department.

3. **Activities of the Inspection Branch (General).**—This Branch of the Department was also entrusted with more business than hitherto, but unfortunately the labour strikes in certain engineering works located in Calcutta and its neighbourhood and the lock-out at the works of the Tata Iron and Steel Co. considerably hampered the largest and the most progressive of the Inspection organizations, namely, the Calcutta Inspection Circle. All the other Inspection Circles were employed to a larger extent than in previous years.

4. **Activities of the Metallurgical Inspectorate, Jamshedpur, and the Government Test House, Calcutta.**—The lock-out at the works of the Tata Iron and Steel Co. naturally had a serious effect on the work of the Metallurgical Inspectorate, the bulk of which is connected with the inspection of the products of those works. In consequence, there was a material reduction not only in the total volume of the stores which came under inspection but also in the number of tests and analyses which were carried out. On the other hand, substantially more work was done in connection with the inspection of the products of the Indian Cable Company, a comparatively new feature of the Inspectorate's activities which gives promise of further development; but this compensated only to a very small extent for the diminution of the work connected with the inspection of the Iron and Steel Co.'s output. It is satisfactory to note, however, that the Government Test House was more largely utilized than in the past, with the result that the outturn of that organization shows an advance in many directions.

5. **Specifications and advisory work.**—A good deal of useful work was carried out in connection with the revision of existing specifications and the preparation of new specifications for stores of various descriptions, and the advice of the Department was sought in regard to the type of stores most suitable for the purpose in connection with a number of schemes of financial importance. The efforts made in the past to improve the standard of certain classes of Indian manufactures by affording technical advice and assistance to manufacturers were continued with satisfactory results.

6. **Indents on the India Store Department, London.**—Further evidence of the success of the efforts made by this Department through the medium of the scrutiny of indents on the India Store Department, London, towards diverting business to the Indian market was afforded by the continued decrease not only in the value of such indents but also in the number of items which the Department found it necessary to challenge.

7. **Financial position.**—The final accounts of the receipts and expenditure of the Department for the year 1928-29 are not at present available; but it is already evident that the financial position at the close of the year was less favourable than at the end of the year 1927-28. The reason for this is to be found almost entirely in the labour troubles which occurred during the year, though the result was to some extent contributed to by the economies effected in the actual purchase of stores. Although not satisfactory, the financial position gives no cause for anxiety, and, if the industrial conditions are not again seriously disorganized, there is no doubt that the set-back experienced during the year will prove to have been of but a temporary character, and that the financial position at the end of next year will show considerable improvement.

CHAPTER II.

Organization.

8. **Changes in organization.**—The services of Mr. J. S. Pitkeathly, C.I.E., C.V.O., C.B.E., D.S.O., the Chief Controller of Stores, were, at the request of the Government of Ceylon, lent to that Government in June 1928 for a period of about nine months, and Mr. K. M. Kirkhope, C.I.E., V.D., the Director of Inspection, was appointed to officiate as Chief Controller of Stores, Mr. H. F. Davy, the Controller of Inspection, Calcutta Circle, succeeding him in the post of Director of Inspection.

Mr. A. G. Khan, an Assistant Director of Inspection, was granted study leave for a period of 13 months from the 13th of November 1928 for the purpose of studying in the works of certain manufacturers in Great Britain and on the Continent of Europe the important developments which have occurred in recent years in Electrical Engineering and in certain specialized branches of Mechanical Engineering, such as oil engines, turbines, machine tools and general engineering plant and appliances. The managing directors of those firms have been requested by this department to render Mr. Khan all possible facilities to study the latest developments in their processes of manufacture and the leading characteristics of the machinery produced by them ; and arrangements have also been made with the High Commissioner to afford that officer such other facilities as may be necessary for visiting these works.

No other change of importance was made in the organization during the year, but a few additions were made to the strength of the subordinate establishment.

9. **Organization of the Department at the end of 1928-29.**—A conspectus of the organization as it stood at the end of the year is provided in Appendix I, the appointments added during the year being shown in italics.

10. **Recruitment of the gazetted staff.**—No officer of gazetted rank was appointed to the staff, but one (a non-Indian) whose services had been lent to the Government of Bombay for employment on the Lloyd Barrage and Canals Contruction Scheme reverted to the Department.

11. **Numbers of European and Indian officers in the Department.**—There were 33 Europeans and 30 Indians holding gazetted appointments in the Department at the end of the year. The proportion of Indians and non-Indians in the gazetted staff of the Department at various stages since its constitution in 1922 are indicated in the graph in Appendix II.

12. **Recruitment of the subordinate technical staff.**—Five technical subordinates (all Indians) were recruited during the year. This class is composed almost entirely of Indians.

13. **Appointment of Consulting Engineers to the Government of India.**—An event of some importance which occurred during the year was the introduction of an arrangement made by the Government of India with Messrs. Rendel, Palmer and Tritton, who have for the past fifty years been employed as the Consulting Engineers to the India Office and latterly to the High Commis-

sioner for India, for the establishment of a branch office in India. This measure was considered necessary for the successful working of the "Rupee Tender System" which the Government of India, as announced in their Resolution No. S-217, dated the 13th September 1928, have decided to introduce in place of the existing arrangements for the supply of articles required for the public service. The functions of the branch office, which was established in December 1928 at No. 4, Lyons Range, Calcutta, in charge of Mr. J. S. Tritton, M. Inst. C.E., M.I.Mech.E., comprise the rendering of advice and assistance in respect of specifications and tenders for technical stores, the standardization of patterns and designs and cognate matters.

The branch office is attached to the Indian Stores Department and its relations to the latter are similar to those of the firm in England to the India Store Department, London; but Departments of the Central Government have free access to it.

CHAPTER III.

Work done.

14. **Procedure.**—The procedure which was prescribed some years ago to regulate the exercise by the Department of the functions entrusted to it remained unaltered during the year.

15. **Field of operations.**—The Department was not employed for the purchase of stores to the same extent as in the year 1927-28 by some of the authorities included among its clientèle. This does not, however, appear to connote any desire on the part of these authorities to undertake their own purchase work; it seems to be due rather to a lessening of their requirements in respect of engineering and miscellaneous stores in consequence of the partial failure of the last monsoon in some parts of the country, and of the progress made on certain large construction works for which all or most of the operating plant and machinery required had already been obtained. It is gratifying to note, however, that this decrease of business was more than counterbalanced by the larger utilization of the services of the Department by other authorities, chief of which were the State Railway Administrations. The extension of purchases for these Administrations was the outcome of a decision which had been arrived at in August 1928 by the Railway Board that several descriptions of stores which are usually purchased on annual contracts should be obtained entirely through the Indian Stores Department. This arrangement, the effect of which, it may be mentioned, was felt only during the latter part of the year, does not restrict in any way the utilization of the Department for the purchase of other classes of stores; and its special importance lies in the fact that it secures for the Department a regular flow of business of a substantial volume. The other authorities which increased their business were the Central Civil Departments, the Indian States, notably the Jaipur State, and also the Company-worked Railways which have been invited to participate in the arrangement

made by the Railway Board for purchases for the State Railway Administrations through the agency of this Department. In the result the Department actually placed contracts for a larger quantity of stores than during the year 1927-28, as will be observed from paragraph 19. In so far as inspection work is concerned, the progress made by the Department during the previous year in extending the field of its operations was fully maintained, and a larger quantity of stores was entrusted to it for inspection than in any previous year, although the value of the stores actually inspected shows a large decline, this being due entirely to the unrest in some of the engineering works in Bengal and Bihar and Orissa and, to a lesser extent, in the textile industry of Bombay, a matter which is dealt with in more detail in the following paragraph. But for this temporary disorganization of these industries there is no doubt whatever that a greater volume of stores would have been inspected during the year than in any previous year.

16. **Effect on the work of the Stores Department of the unsettled labour *conditions in 1928-29.***—The lock-out at the works of the Tata Iron and Steel Co. at Jamshedpur, which followed a prolonged period of labour unrest, lasted from the 1st June to the 13th September 1928. This caused not only a great diminution in the outturn of those works, although there was no total cessation of work, but also seriously dislocated manufacture at several Engineering works in and around Calcutta, more particularly those of Messrs. Jessop & Co., Burn & Co., the Indian Standard Wagon Co., and Braithwaite & Co., as well as at the State Railway Underframe Shops at Tatanagar. In consequence, some of the material ordered from the Tata Iron and Steel Co. had to be ordered from abroad. The effect, apart from the diversion of business from an Indian manufacturer, was to delay considerably the progress of the large orders for wagons placed by the Railway Board during the year, the work on the Bally Bridge, the first span of which, instead of being completed on the 15th March 1929, will not be ready for inspection until the middle of the year 1929-30, and the output from the State Railway Underframe Shops at Tatanagar. It may be noted here that this Department has been specially entrusted with inspection in these shops though they are owned and worked by a State Railway. The dislocation of output at the factories of Messrs. Jessop & Co. and Burn & Co. caused by the lock-out at the works of the Tata Iron and Steel Co. was aggravated by the labour strikes at those factories which took place as a mark of sympathy with the strike on the East Indian Railway.

These disorganizations of manufacture adversely affected the work of the Metallurgical Inspectorate and the Calcutta Inspection Circle, materially reducing the quantities of stores which were presented to those organizations for inspection during the year.

The strikes at the textile mills at Bombay resulted, in so for as the work of this Department is concerned, in the withdrawal of an order for 12,000 hospital sheets of the value of Rs. 29,300 and its transfer to the London Stores Department. They also necessitated the cancellation of several other orders placed with these mills, thus affecting the work of the Bombay Inspection Circle to some extent, but in these cases it was found possible to re-purchase the materials from mills in other parts of India. The effect of this, however, was to impose an extra cost of about Rs. 45,900 on the general tax-payer, as

it was not possible to obtain the materials required at the rates contracted for with the Bombay mills. Some delay was also experienced in the supply of materials.

17. **Purchase of stores for the major local Governments.**—Compared with the year 1927-28, there was a considerable drop, amounting to over Rs. 25 lakhs, in the aggregate value of the contracts entered into on behalf of the major local Governments as a whole. The decrease is due to smaller demands from the Governments of Bombay and the Punjab for engineering stores for the Lloyd Barrage and Canals Construction Scheme and the Sutlej Valley Project, and from the Government of Burma for textiles for the Police Department in that province, owing, evidently, to its requirement for such stores during 1928-29 having been provided for by the large contract to the value of Rs. 5,15,000 for a two years' supply which had been placed by the Department for the local Government in the preceding year. Many of the other Departments in these provinces who utilize the services of this Department increased their purchases during the year, particularly the Jail Departments in the Bombay Presidency and the Punjab. The net effect of these variations was that the value of the contracts placed for the Bombay, the Punjab and Burma Governments decreased by Rs. 4,07,000, Rs. 23,82,000 and Rs. 6,79,000 respectively. As regards the other local Governments, contracts of a larger value were placed for the Governments of Madras, Bengal, the United Provinces and the Central Provinces, but a smaller volume of business was transacted for the Governments of Bihar and Orissa and Assam. The utilization of the services of the Department by the Government of the United Provinces is of peculiar interest in view of the fact that that Government has established its own organization for the purchase of stores. The work undertaken for the local Government consisted almost entirely of a large contract for the supply of a power and a pumping plant with 31 miles of transmission line for an important scheme, known as the Sumera Hydro-Electric Pumping and Power Supply Scheme, prepared by the provincial Public Works Department with the primary object of supplementing the water supply provided by the Ganges Canal for irrigation purposes. This Department advised the Public Works Department authorities as to the type of plant most suitable for the purpose, prepared the specifications and the schedule of requirements, and after considering the various tenders received from firms established in India and abroad placed the order at the most satisfactory price obtainable. It has made arrangements for the efficient inspection in the country of origin of the plant and materials, and will inspect the complete plant after its erection in order to ensure that the work is carried out satisfactorily.

Work of the Purchase Branch.

18. **Indents and items.**—The number of indents and items dealt with during the year is shown in the table below, from which it will be observed that there was a decrease as compared with 1927-28, more especially in the case of items. This fall, which occurs mainly in the headquarters office, is attributable to the expansion of the system of rate and running contracts, which are referred to in paragraph 26, and to the discouragement of demands from consuming Departments for items of small value which can be

purchased as economically and with less trouble by the indentors themselves in the local markets.

Organization	No. of Indents.		No. of Items.	
	1927-28	1928-29.	1927-28.	1928-29.
Headquarters	4,886	3,595	27,028	11,978
Calcutta	2,805	2,960	19,505	17,930
Bombay	1,745	2,148	8,911	7,912
Karachi	1,751	1,925	14,669	14,897
Total	11,187	10,628	70,113	52,717

19. **Value of contracts.**—It will be observed from Appendix III and Appendix VI, which show respectively the work carried out on behalf of the various authorities who entrusted the Department with purchase work and that undertaken by each of the purchase organizations of the Department, that the value of the contracts placed declined from Rs. 3,73,04,672 in 1927-28 to Rs. 3,60,48,074 in the year under review. This fall does not, however, indicate any decline in the aggregate volume of the business entrusted to the Department during 1928-29. It is the result of an alteration in the method of computing the value of the contracts placed during a financial year. Hitherto credit has been taken for the total value of the contracts placed during the year, irrespective of whether or not supply is to be spread over two or more financial years. It has now been arranged that the total value of the contracts placed in a financial year should comprise only the amounts of definite orders for supply during that or the following financial year, *plus* a proportionate share of the amount of the orders which provide for supply during a period extending beyond the latter year, and the value of actual requisitions made against running or rate contracts during the year. Had the method adopted in past years been followed the aggregate value of the contracts which were entered into in 1928-29 would have amounted to Rs. 3,86,17,024 exceeding the figure of 1927-28 by Rs. 13,12,352, and this notwithstanding the fact that many descriptions of stores were obtained during 1928-29 at lower rates than those paid during the previous year. For instance, prices for certain important items of cotton and woollen textiles averaged 7 per cent. lower than the level ruling in 1927-28. Similarly, prices for certain oils, timber and hardware articles were less by an average of about 5 per cent. At the rates obtainable during 1927-28 the cost to the consumers on account of these items would have amounted to about Rs. 1,56,000 over and above the sum for which the purchases were actually effected. In addition, there was a further, and appreciable, reduction in cost, amounting to over Rs. 4,30,000, which was brought about by the purchase of a particular brand of axle oil in lieu of the brands formerly purchased by this Department. These results are instructive as

illustrating the practical benefits that may be derived by the entrustment of business to a Department which operates on a large scale in all the markets of India and which through the medium of firms established in India explores the potentialities of foreign markets.

The contract relating to the purchase of axle oil referred to above is of special interest. All but a comparatively small quantity of the oil purchased in 1928-29 is of purely Indian origin and manufacture, and conforms to a specification specially drawn up by the Indian Stores Department and accepted by the Railway Standards Committee for use during both the summer and the winter, thus avoiding the inevitable waste and the inconvenience attending the use of different grades of oil for the same purpose. This Department was able to secure the specially favourable rate obtained in consequence of the bulking of the demands of several indentors, and as a result effected a direct saving of Rs. 1,93,884 on this transaction alone. Further savings in cost amounting to Rs. 1,06,566 were obtained through the substitution of certain other brands of oils and of paints, enamels and varnishes in place of those previously utilized, in addition to which a saving of Rs. 55,740 accrued on certain clothing contracts placed by the Department. The saving in connection with the purchase of paints, enamels and varnishes, which amounted to Rs. 28,746, is noteworthy, inasmuch as the bulk of it, namely Rs. 25,746, was secured by the purchase of substitutes manufactured in India in place of articles of foreign manufacture which had been indented for by the consumers. The aggregate amount of the savings referred to, Rs. 3,56,190, which, it may be noted, was not the total amount of the savings actually effected, is almost equal to the whole of the charge of one per cent. for purchase, excluding inspection, payable to this Department on the entire purchases amounting to Rs. 3,60,48,074 made on behalf of all its clients during the year.

It will be apparent from the foregoing remarks that the Department was actually entrusted with a larger volume of business during 1928-29 than in the previous year, despite the substantial reduction in the demands to which reference has already been made. This is further evidenced by the following statement which shows the quantities of various classes of stores purchased by the Headquarters office during the year under report and in the preceding year respectively. The list is not exhaustive; but, considered in the light of the other relevant factors, namely, the alteration in the method of calculating the value of the purchases and the reduction in prices, it serves to establish the point that 1928-29 witnessed a substantial growth in the volume of the business dealt with by the Department.

		1927-28.	1928-29.
TEXTILES.			
1. Cloth, cotton and woollen	Yds.	3, 472,406	4,935,879
2. Cotton wool and yarns	Lbs.	481,616	1,175,500
3. Articles made of cotton, wool, jute and canvas	Nos.	516,739	882,847
4. Putties, gloves, etc.	Pairs	51,997	135,343
5. Ropes and cordages	Fms.	102,400	142,200

		1927-28.	1928-29.
MISCELLANEOUS STORES.			
6. Cement	Tons	37,480	40,590
7. Soap, soft and hard	Cwts.	1,580	3,000
8. Oil, fuel	Tons	14,900	16,350
9. Petrol	Gals.	63,500	207,400
10. Kerosene oil	"	148,400	2,144,100
11. Castor oil	Cwts.	1,450	19,460
12. Greases	Lbs.	257,230	290,500
13. Lubricating oil	Gals.	609,960	2,857,930
14. Linseed oil (raw and double boiled)	"	43,460	306,300
15. Paints, stiff and mixed	Cwts.	20,250	41,250
16. Enamels and varnishes	Gals.	3,580	70,850
17. Coal tar for painting	"	2,480	43,970
18. Turpentine	"	1,500	49,640
19. Turpentine substitute	"	..	30,540
20. Graphite	Cwts.	..	3,000
21. Disinfecting fluid	Gals.	..	18,520
22. Cutting oil	"	..	16,300

20. **Purchase of textile stores.**—The aggregate value of the contracts entered into during the year for the purchase of textile stores amounted to Rs. 1,16,24,973, as against Rs. 1,18,82,009 during 1927-28. Had the figure for 1928-29 been calculated according to the method adopted in previous years it would have reached the total of Rs. 1,40,36,325, which shows a respectable increase over the corresponding figure for 1927-28. The Army continued to be the largest indentor for this class of stores, and the business undertaken on its behalf exceeded in value that transacted for all the other indentors combined. The next largest indentors are the Railway Administrations, which entrusted to the Department an appreciable volume of business during the year. Larger demands were received from the Central Civil Departments, the most prominent of which were the Indian Posts and Telegraphs Department, the Northern India Salt Revenue Department and the Director General, Indian Medical Service. On the other hand there was a reduction in the amount of the business dealt with for the major Local Governments. This, as indicated in paragraph 17, is due to the supply of the requirements for the Police Department in Burma for two years having been arranged during 1927-28.

Appendix IV indicates the values and proportions of indigenous and imported stores respectively. As in the past, goods of Indian origin and manufacture continued to be given preference within the limits of correct business principles, with the result that all but a very small fraction (2·8 per cent.) of the textile stores purchased during the year were either produced entirely in India from Indian material, or manufactured in India from imported material.

A reference may here be made to an enquiry which was received by the Department during the year from the Controller of Stores and Manufactures under the Prison Commission in England as to whether it would be possible

for the Prison Commissioners to obtain their requirements of coir and jute yarns and fibres through the agency of the Department. No difficulty was anticipated in dealing with this work, and accordingly, on the recommendation of the Department, the Government of India have authorised the Department to undertake it. The Prison Commission have been so informed, and orders for supply are now awaited.

21. **Purchase of Engineering and Miscellaneous stores.**—There was a considerable decrease in the volume of the business in respect of these classes of stores received during the year from the Army Department and the major Local Governments, resulting in the reduction of over Rs. 48,80,000 in the total value of the contracts placed on behalf of these authorities. Larger demands were, however, received from the Railway Administrations, the Central Civil Departments and the Indian States, more especially the Railways, in consequence of which contracts to the value of over Rs. 39,00,000 more than in the previous year were placed on behalf of those Administrations. But these increases did not suffice to counterbalance the fall in the figures relating to the Army Department and the major Local Governments, and there was, therefore, a decline in the total value of the contracts for these classes of stores from Rs. 2,54,22,663 to Rs. 2,44,23,101. The difference between these figures is, however, more than fully accounted for by the shortening of prices during 1928-29, and by the difference in the method of calculating values, and it may be confidently stated that on the whole the Department was actually entrusted with the purchase of a larger quantity of engineering and miscellaneous stores during 1928-29 than in the previous year.

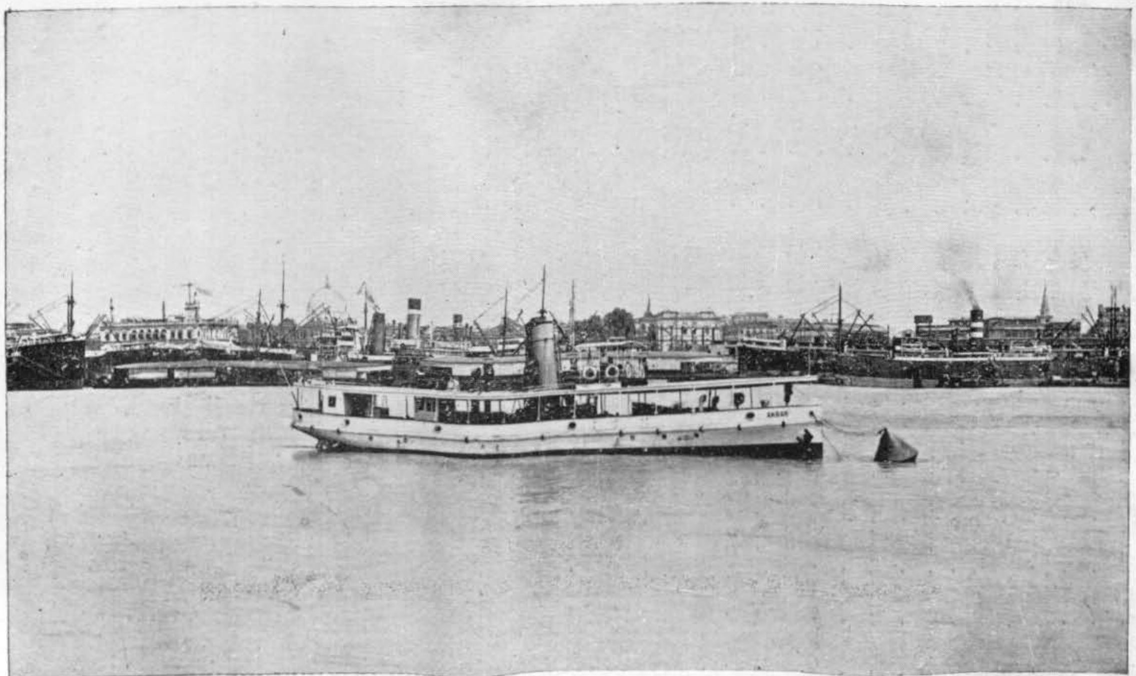
An important feature of the operations of the Department in this branch of its activities is the increasing utilization of the resources of India, an indication of which is afforded by the particulars of purchases furnished in paragraph 58. The total value of important items of engineering and miscellaneous stores of Indian origin and manufacture for which contracts were placed during 1928-29 exceeded Rs. 60,00,000, a figure which represents about one quarter of the total purchases of these classes of stores.

Another matter of some interest is the utilization of the Indian Stores Department for the purchase of sea-going craft. The Department has for some years placed orders on behalf of various authorities for craft intended for use on inland waters and in sheltered harbours, but this is the first occasion in its history on which it has been entrusted with the purchase of sea-going craft. Demands were received from the Chief Commissioner of the Andaman Islands during the year for the supply of—

(*a*) one steel, single screw, sea-going type, single deck, steam launch, 100 feet length and 16 feet 6 inches beam for harbour and sea work in the Andaman Islands ; and

(*b*) one steel, twin screw, shallow draught, steam lighter of 135 feet length and 35 feet beam, to be used for the purpose of carrying logs from camps in the Islands to the mills and for coasting in ordinary weather conditions.

(*c*) Three steel barges each of 80 feet length and 18 feet beam of 100 tons carrying capacity.



STEAM LAUNCH " AKBAR ".

The contract for the launch, an illustration of which faces this page, was placed during the year with a firm established in India; and arrangements were made for the construction of the barges in a Government dockyard. The purchase of the lighter will be arranged for during 1929-30. The specifications for all these vessels were prepared by this Department in consultation with the Principal Engineer and Ship Surveyor to the Government of Bengal, whose advice was sought on the tenders received for the launch and barges and who will supervise their inspection during construction. The indications point to a continuance of work of this description during 1929-30.

22. **Distribution of purchases.**—The series of diagrams and statistics given in Appendix V show that the business of the Department continued to be as widely distributed as in past years, and indicates that, as hitherto, the most suitable sources of supply were resorted to.

23. **Details of important purchases.**—The more important contracts placed during the year are specified below :—

TEXTILES.

	Amount. Rs.
1. Tents and tent components	19,42,000
2. Blankets, woollen	15,83,000
3. Drill, khaki, coloured, white and grey	15,70,000
4. Serge and greatcoat cloth	6,40,000
5. Yarn, woollen and cotton	6,03,000
6. Pugree cloth, muslin, nainsook, calico, etc.	4,59,000
7. Socks, woollen and cotton	4,14,000
8. Waistcoat cardigans, jerseys and jackets	3,00,000
9. Cordages, ropes and twine	3,00,000
10. Paulins	2,99,000
11. Bags, postal, flax and jute, canvas, proofed and unproofed	2,72,000
12. Sheets, barrack and hospital	2,71,000
13. Hessians and gunnies	2,51,000
14. Felt	1,90,000
15. Dosuti	1,83,000
16. Durries, cotton	1,69,000
17. Wool cotton, absorbent, surgical	1,61,000
18. Jhools and rugs	1,13,000
19. Blanketting cloth	89,000
20. Alpaca	85,000
21. Bags, kit	82,000
22. Canvas, flax waterproof	76 000
23. Gloves, worsted (mittens)	76,000
24. Flannelette, Mark III	71,000
25. Gauze, absorbent	71,000
26. Dhoti cloth and sheetings	66,000

TEXTILES—*contd.*

	Amount. Rs.
27. Putties, woollen and cotton	62,000
28. Oxford cloth	59,000
29. Rope, Manilla, coir	52,000
30. Bandage cloth	50,000
31. Covers, bonnet, for cars and lorries	50,000

ENGINEERING AND MISCELLANEOUS.

32. Spare and replacement parts for excavating machinery	16,96,000
33. Electric lamps, fans and fittings	16,57,000
34. Cement	15,55,000
35. Steel sections	14,54,000
36. Electric generating plant	12,68,000
37. Oil, kerosene	12,34,000
38. Oil, axle, all weather	10,40,000
39. Oil, lubricating, cylinder (ordinary and superheat) and miscellaneous	9,50,000
40. Oil fuel	9,28,000
41. Pipes and fittings	9,15,000
42. Workshop machinery and tools	6,65,400
43. Paints	6,36,800
44. Oil, linseed	6,08,000
45. Enamels and varnishes	5,32,000
46. Oil, castor	4,36,000
47. Engineering plant and equipment	4,11,000
48. Sluice gates and regulators, canal	4,09,000

ENGINEERING AND MISCELLANEOUS—*contd.*

	Amount. Rs.
49. Cables, electric	3,31,600
50. Bridge girders and bridge material	3,28,000
51. Sheets, galvanized, plain and corrugated	3,15,000
52. Oil, gas making	3,09,000
53. Petrol	2,40,000
54. Railway material—permanent way	1,73,000
55. Road rollers	1,73,000
56. Steel work for buildings	1,62,000
57. Electrical distribution material	1,53,000
58. Asphalt	1,40,000
59. Turpentine, genuine	1,33,000
60. Oil-driven locomotives	1,16,000
61. Steel bins	1,00,000
62. Launches, steam, sea-going	95,000

ENGINEERING AND MISCELLANEOUS—*concld.*

	Amount. Rs.
63. Road tar	84,000
64. Copper wire, bare	75,000
65. Cooking appliances	75,000
66. Baling wire	72,000
67. Greases	69,000
68. Trafford tiles and ridging	69,000
69. Tip wagons, 2′—0″ gauge	68,000
70. Sheets, asbestos, cement, corrugated	65,900
71. Railway sleepers, sal, deodar, etc.	61,000
72. Timber for packing cases	60,000
73. Meters, water	60,000
74. Meters, electric	57,000
75. Soaps, soft and hard	54,000
76. Steel lighters, sea-going	53,000
77. Wire gauge, bronze	50,000

24. **Provincial Purchase Agencies.—The Calcutta Purchase Circle.**—The number of indentors remained practically stationary during the year ; and, although, as shown in paragraph 18, there was an increase in the number of indents received, it was accompanied by a considerable decrease in the number of items dealt with. The number of orders placed during the year also diminished from 6,580 to 6,476. These results naturally reacted on the work of the Circle, and were partly responsible for the further fall from Rs. 21,48,137 to Rs. 17,84,125 in the value of the contracts placed. The other causes which contributed to this drop were the receipt of smaller demands from the Army and the Posts and Telegraphs Departments, the downward trend of market prices, the extension of the system of rate and running contracts which enabled indentors to place their demands direct on the firms against contracts placed by the Headquarters office, and the discouragement of demands for petty items. The Circle, however, carried out a certain quantity of work, which is not reflected in the above figures, in connection with the placing of some large orders by the Headquarters office.

25. **Bombay Purchase Circle.**—The work of this Circle was also affected by most of the causes referred to above ; but the main reason for the decline in the value of the contracts entered into by it from Rs. 11,25,408 to Rs. 11,14,704 was the transfer to the Headquarters office of the execution of contracts for certain large supplies of cotton yarn required by the Jail Department in the Bombay Presidency. But for this factor there would have been an increase in the value of the contracts placed by this organization during 1928-29. The number of indents received increased from 1,745 to 2,148, and the number of orders from 2,873 to 3,518, but the number of items decreased from 8,911 to 7,912.

26. **Karachi Purchase Agency.**—The progress made by this Circle in the past was fully maintained, although the factors which operated so as to reduce the work of the Calcutta and Bombay Circles operated in this Circle also. The number of indents and items dealt with showed a satisfactory increase, and the 5,895 orders which were placed during the year, against 5,168 issued during the previous year, provided for the supply of stores to the value of Rs. 15,22,908, being an increase of nearly Rs. 1,50,000 over the corresponding figure for 1927-28. The bulk of the purchases was made for the Military Engineering Service, the Lloyd Barrage and Canals Construction Scheme and the Punjab Public Works Department, on behalf of which authorities contracts to the value of Rs. 14,11,789 were placed during the year.

27. **Running and Rate contracts.**—During the year 143 rate or running contracts were entered into by the Headquarters office, some of which, however, will come into operation during 1929-30. In addition, there were in force 23 contracts which had been entered into during the previous year. Two of the provincial purchase organizations of the Department, namely, the Calcutta and the Karachi Circles, entered into similar contracts for the first time during 1928-29, the number of contracts placed by them amounting to 74 and 20 respectively. Particulars of all these contracts will be found in Appendix VII. The number of contracts in operation during 1927-28 was 131 only. Thus, there has been a substantial extension of this system of purchase, which is not only economical in itself, but makes for expeditious supply with the minimum of trouble and inconvenience.

28. **Comparison with the London Stores Department.**—Appendices VIII and IX furnish a comparison of the expenditure on stores and freight incurred by the India Store Department, London, with the value of the contracts entered into by the Indian Stores Department during the three years 1925-26 to 1927-28. The figures in the former case have been converted into Indian currency at the rate of 1s. 6d. to the rupee. In Appendix VIII a comparison has also been made between the number of contracts placed by the two organizations during the same period. It will be observed that, while the contracts executed by the Indian Stores Department are increasing in number, those entered into by the India Store Department, London, are decreasing. The latter Department still purchases a much larger volume of stores, but the position will be considerably altered on the introduction of the rupee tender system.

29. **Administrative Inspection Branch at Headquarters.**—The burden of work carried by this Branch continued to be heavy, and it performed useful service in the preparation and revision of specifications, the preparation of schedules of requirements and the technical scrutiny of engineering schemes, besides supervising the work of the provincial Inspection Circles.

30. **Specifications.**—During the year thirty-three specifications were revised and seventy-one new specifications framed, of which twelve were for special classes of stores. A specification worthy of special notice is that for Sluice gates, vertical sliding and radial types for small branches, distributaries and minors of the Lloyd Barrage and Canals Construction Scheme. A list of all the specifications which were current at the end of the year 1928-29 will be found in Appendix X.

31. **Schedules of Requirements.**—Particulars of all the schedules of requirements which were issued during 1928-29 are furnished in Appendix X-A. Of these 145 were framed during the year and 12 were revised, the more important being :—

1. Two oil-engine driven, three throw ram pumping sets replacement plant for the Military Engineering Service, Kasauli.
2. Four oil-engine driven, direct current generating sets, switchboard, overhead crane, etc., for the Central Jail, Mach, Baluchistan.
3. Ferry steamer for the Public Works Department, Punjab.
4. Oil pipe line from Repalli to Chattragadda and pump for oil fuel for the Public Works Department, Madras.
5. Oil engine driven alternator sets, cooling plant, fuel tank, switchboard, transformers, Power House Workshop plant, etc., for the Military Engineering Service Power Station, Ahmednagar.
6. 11,000 volt overhead power transmission line for the Sumera Hydro-electric Pumping and Power Supply Scheme of the Public Works Department, United Provinces.
7. One Ice making plant for the Military Engineering Service, Landi-kotal.
8. One 5-ton electric telpher (monorail) complete with track for the Chief Forest Officer, Andamans.
9. Water-borne sewage pumping for the Military Engineering Service, Northland, Ishapore.
10. Radial gates for the head and cross regulators for main canal and branches of the Lloyd Barrage and Canals Construction, Sind.

32. **Technical Scrutiny of Engineering schemes.**—Thirteen Engineering schemes framed by various Departments were examined during the year, and this scrutiny resulted in the placing of orders to the aggregate value of Rs. 12,36,017.

33. **Erection at site orders.**—The number of such orders dealt with during the year amounted to 39 of the aggregate value of Rs. 19,70,033.

34. **Bounties on wagons.**—One hundred and seventy-five certificates were issued for the payment of bounties on wagons. All contracts under which bounties were payable under section 4 (1) (*b*) of the Steel Industry (Protection) Act, 1924, as amended by section 3 of Act VIII of 1926, were completed during the year.

35. **Publications issued.**—A pamphlet entitled " The Manufacture of Paint and Varnish in India " was issued during the year. The first edition of this pamphlet was published in 1919, and was one of the series of memoirs prepared at the instance of the Indian Munitions Board with the object of drawing the attention of the public to the existing condition and the prospects of the future development of certain Indian industries. In view of the very considerable expansion of the paint industry in India since 1919 the present edition was entirely re-written. The publication should prove useful in acquainting the users of paints both in the public service and elsewhere with

the quality and relative merit of the superior grades of Indian raw materials and products of this industry.

36. **Work done by the Provincial Inspection Circles.**—The work of two of these organizations was, as already shown, considerably hampered by the industrial unrest which prevailed in certain parts of India during the year. Nevertheless, the business entrusted to this Branch of the Department continued to expand and develop. The Calcutta Circle is still the largest and most important, but the Bombay Circle continues to develop rapidly and there has been a marked advance in the Karachi Circle, *vide* Appendices XI, XII and XII-A.

37. **Calcutta Inspection Circle.**—There was a very marked increase both in the number and in the value of the orders received for inspection by this Inspectorate during the year. The former rose from 9,412 to 11,859 and the latter from Rs. 2,23,56,990 to Rs. 4,61,48,993. The total value of the stores actually inspected, however, dropped by approximately Rs. 71,00,000. This fall is entirely due to the labour troubles in the engineering industry in Bengal and Bihar and Orissa. Had the situation been normal, the results obtained during 1927-28, which was a record year for the Circle, would undoubtedly have been surpassed.

The major portion of the work was, as in past years, undertaken for authorities who make their own purchases direct. The orders received from such authorities increased from 1,372 to 2,047 and their value from Rs. 1,44,47,802 to Rs. 3,75,29,702. The Railway Administrations continued to be the chief indentors, and the volume of work entrusted by them to the Inspectorate was considerably augmented by the large orders for wagons and underframes which had been placed with firms in India during the year. The Inspectorate was asked to undertake the inspection of 5,396 wagons and underframes of the aggregate value of Rs. 2,22,19,000 approximately, a record for this particular class of work. The value of the work inspected for these Administrations amounted to 65 per cent. of the total value of the stores which actually came under inspection. Next in order of magnitude is the work connected with the contracts placed by the Indian Stores Department itself. The value of this class of work which was inspected amounted to 31 per cent. of the total value of the inspected work, and exceeded the figure of the previous year by Rs. 12,34,000. Stores to the value of Rs. 2,20,000 over and above the previous year's figure were inspected on behalf of the Indian States and private concerns.

During the year the more important orders which were received for inspection, other than the orders for wagons and underframes mentioned in the preceding paragraph, are :—

(1) The contract of approximately Rs. 49,45,000 in value for the steel work of the Bally Bridge, Calcutta Chord Railway, which consists of seven spans (other than the approach spans) of 350 feet aggregating 17,000 tons in weight, including the cast steel bearings, the largest of which weighs 6½ tons.

(2) The orders from the Bengal Nagpur Railway for cast iron plate sleepers amounting in value to approximately Rs. 39,57,800.

(3) The order of the value of approximately Rs. 11,12,338 for the Perambur Workshop Remodelling placed by the Madras and Southern Mahratta Railway.

38. **Bombay Inspection Circle.**—The operations of this Inspectorate continued to expand and develop. The number of orders received for inspection increased from 4,634 to 6,471 and their value from Rs. 88,49,247 to Rs. 1,18,13,218. There was also an increase in the total value of the work actually inspected, from Rs. 1,12,23,828 to Rs. 1,22,03,581 (including the approximate value of stores charged on weight). Unlike the Calcutta Circle, the Bombay Inspectorate is employed more extensively on the inspection of orders placed by the Department itself, the value of these having amounted to Rs. 82,90,867, a sum which represents over 70 per cent. of the total value of the orders received.

The more important of the orders received are the following :—

(1) Bridge girders for the Bhor Ghat re-alignment for the Great Indian Peninsula Railway of 100 feet overall length. Value Rs. 77,718.

(2) 21 plate girder spans for Colhasa, *viz.*, twenty 40 feet spans and one 60 feet span. Value Rs. 1,18,849.

(3) Order for the Cochrane Canal Bridge for the Madras and Southern Mahratta Railway including cast iron cylinders and screws, steelwork and troughing. Value Rs. 5,28,770.

(4) Order for 48 spans, 65 feet overall length, placed by the North Western Railway. Value Rs. 3,64,460. The methods adopted during fabrication have enabled as many as eight spans to be turned out per week.

(5) Perambur Works remodelling (Iron Foundry) placed by the Madras and Southern Mahratta Railway. Value Rs. 1,80,000.

(6) Steelwork for an electric locomotive Erecting Shop and a Boiler Shop placed by Great Indian Peninsula Railway. This includes crane girders for 120 ton cranes. Value Rs. 1,58,037.

The utilization of the Circle by the Railway Administrations has enabled it to afford local manufacturers some assistance in improving the quality and standard of their products, more especially points and crossings and permanent way materials.

39. **Government Test House, Bombay.**—The services of the Test House were more fully utilized during the year than in the past. The number of tests undertaken was 517, of which 414 were physical tests, 96 chemical tests, and 7 tests on oils.

Miscroscopic slides of various textile fibres have been prepared and preserved for reference. Similarly samples of cotton and woollen fabrics dyed with various single and mixed dye groups approximating to shades with which the Department is often required to deal have been prepared to facilitate the work of identifying dyes on fabrics.

A list of the apparatus installed at the Test House is given in Appendix XVI, and the details of articles of various descriptions tested are given in Appendix XVIII.

40. **Cawnpore Inspection Circle.**—The bulk of the work on which this Inspectorate is employed is connected with the orders placed by the Indian Stores Department itself, and consists in the main of the inspection of power plants and machinery, though an appreciable volume of textiles and leather goods comes annually under inspection. The number and value of the orders received increased from 1,209 to 1,893 and from Rs. 64,47,198 to Rs. 65,18,517 respectively. There was also an increase in the value of the orders actually inspected, this having risen from Rs. 46,63,250 to Rs. 57,90,331.

The following are the more important installations which were inspected during the year :—

(*a*) Electric generating plants for—

(1) the Military Engineering Service at Campbellpore, Fyzabad and Benares.

(2) the North Western Railway at Khanewal.

(3) the Public Works Department at Ghazipur.

(4) the Municipalities of Simla, Mussoorie and Dehra Dun.

(*b*) Pumping plants for the North Western Railway at Montgomery and Gogra.

The Inspectorate continued its efforts towards effecting an improvement in the manufacture of locks and other metal articles by firms in Aligarh and elsewhere.

41. **Karachi Inspection Agency.**—The work of this Inspectorate also is expanding. There was an increase in the number of orders received from 7,750 to 9,741, and the value of the stores inspected amounted to Rs. 76,65,678 (including the approximate value of stores charged on weight), representing an increase of 36·5 per cent. over the corresponding figures of the previous year.

The Inspectorate was not utilized during the year for the inspection of stores purchased direct by the Government of Bombay, public bodies and private concerns, but the Government of Bombay has made practically all its purchases through the Department, and these purchases are inspected as a matter of course by the Department. The contraction of its activities in this direction was more than counter-balanced, however, by the larger volume of business which it received from the Railway Administrations, particularly the North Western Railway, with the result that it was occupied to a larger extent than in any year previously with the inspection of stores purchased by other authorities. The total value of such orders inspected during the year amounted to Rs. 31,90,340, as against Rs. 7,19,648 in 1927-28, which was the highest figure previously recorded. The Circle was in 1928-29 employed for the first time on the inspection of plant during and after erection at site, the number of such plants having amounted to 20.

42. **Madras Inspection Branch.**—This Inspectorate is employed most largely on the inspection of textile stores, though engineering and hardware stores to the value of a little over a lakh of rupees were dealt with during the year. The total value of the stores inspected was Rs. 6,33,590, exceeding the figure of the previous year by Rs. 94,038.

43. **Inspection of firms and technical advice to manufacturers.**—As in past years, the Inspectorates continued to be employed on the inspection of firms applying for enrolment on the lists of suppliers maintained by the Department and in furnishing advice and instructions to manufacturers. Much useful work was done in these directions.

CHAPTER IV.

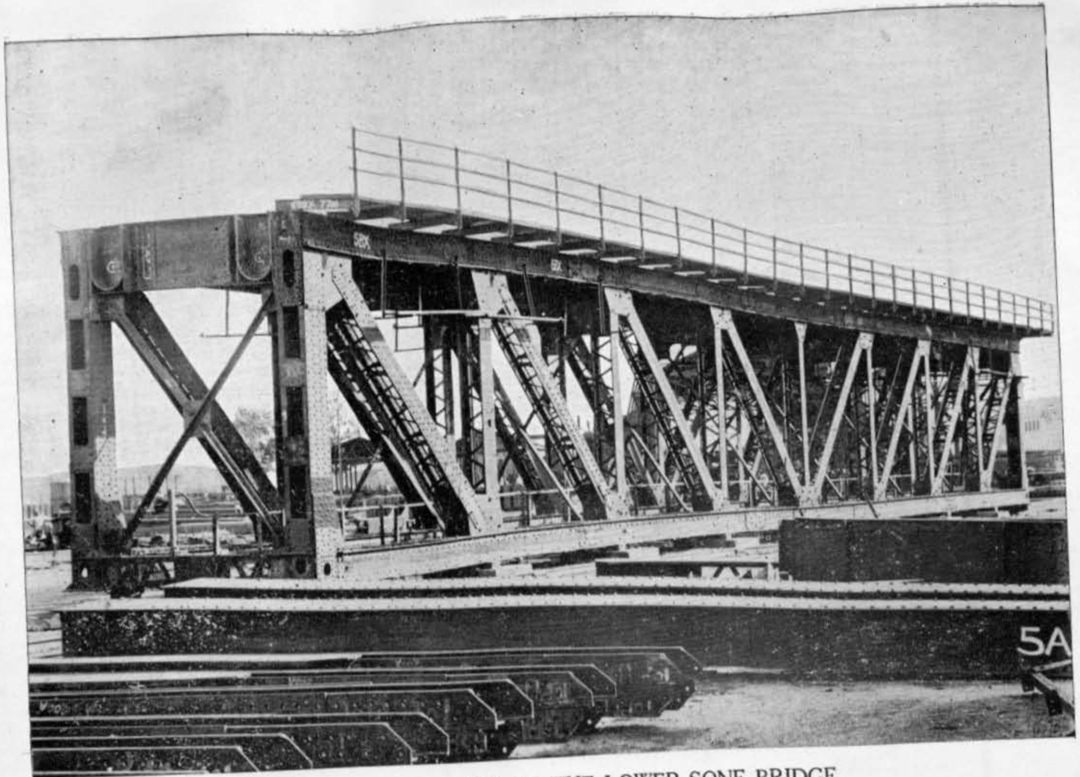
The Metallurgical Inspectorate.

44. **Work done.**—It has been stated in paragraph 16 that the disorganization of manufacture owing to the labour unrest and subsequent lock-out from June to the middle of September 1928 at the works of the Tata Iron and Steel Company, the inspection and testing of the products of which form the bulk of the work of the Inspectorate, had a serious effect on the business of that organization during the year. It will be observed from the diagrams in Appendix XI (vi) that the weight of the material inspected dropped from 331,628 to 176,249 tons. There was also a reduction in the number of the special tests carried out, which fell from 5,540 to 3,303. The work connected with the estimation of carbon, silicon, manganese, sulphur and phosphorus and the number of Physical (routine) tests carried out at the laboratories of the Inspectorate were also affected, the number of estimations and of such tests having, as will be observed from the graph forming Appendix XIII, dropped from 31,631 to 22,272, and from 59,573 to 40,031 respectively. There was, moreover, a further diminution of the work connected with the sampling and analysis of ammonium sulphate, the number of samples analysed being only 38, representing 6,113 tons of sulphate as compared with 106 representing 4,420 tons of sulphate sampled and analysed during the preceding year. This reduction was not caused by the lock-out, but was due to the fact that the product of the Iron and Steel Company has now reached a very uniform composition rendering extensive sampling and analysis unnecessary.

On the other hand, as anticipated in the report for 1927-28, a substantial increase occurred in the volume of the work undertaken in connection with the output of the works of the Indian Cable Company, the total value of the materials inspected on behalf of the Company itself and in connection with the orders placed by the Indian Stores Department having risen from Rs. 7,35,527 to Rs. 11,73,922. An arrangement has been made with this Company, at their own request, to test and certify practically their entire outturn of cables, so that there is every prospect of a further and substantial increase of this branch of the Metallurgical Inspectorate's activities.

45. **Investigations.**—The number of investigations carried out during the year amounted to 62 (excluding 19 done for other organizations of the Indian Stores Department). This number was not so large as that (160) undertaken during 1927-28, but the revenue derived from the work exceeded that realized during the previous year, the figures being Rs. 3,584 and Rs. 1,626 respectively.

46. **Office accommodation.**—Under an arrangement arrived at by the Government of India with the Tata Iron and Steel Company the latter took over the old office building belonging to the Metallurgical Inspectorate in



ONE OF THE SPANS OF THE LOWER SONE BRIDGE.

exchange for two new buildings which were specially constructed by them for the purpose in a more suitable locality. The new buildings, of which a photographic reproduction appears facing the frontispiece, afford better accommodation and are superior in every respect to the old premises, notwithstanding which the exchange was effected without any additional cost to Government.

47. **Inspection and testing equipment.**—A complete list of the apparatus installed at the Inspectorate will be found in Appendix XIV.

CHAPTER V.

The Government Test House, Calcutta.

48. **Work done.—General.**—The progress made in the past was more than maintained during the year under review, as will be observed from the diagrams in Appendix XI (vii). The total number of samples tested during the year amounted to 9,133, this being an increase of 21 per cent. over the number dealt with during 1927-28. There was also an increase in the number and variety of the investigations carried out on behalf of various authorities.

49. **Physical section.**—In this section 4,996 samples were tested, as compared with 3,894 in the previous year. This increase has been mainly due to the receipt of a large number of metal samples of all descriptions. A satisfactory increase, from 83 to 221, also occurred in the number of samples of automatic vacuum brake components received for test on the plant and equipment installed in 1924-25. There was, however, an appreciable reduction in the number of tests of cement, abrasion tests of bricks, and compression tests on concrete and mortars, these falling from 1,296,210 and 394 to 88,550 and 284 respectively. This fall is attributable to a large extent to the completion of the works connected with the construction of King George's Dock.

There was no material change in the number of tests carried out on samples of textile and of electrical materials. The development of the electrical subsection was hampered by inadequate accommodation and equipment, but the completion of the new electrical laboratory towards the close of the year and the installation of the testing plant and equipment which is being obtained should result in a considerable expansion of this branch of the work of the Test House.

50. **Chemical section.**—Despite the reduction from 1,405 to 1,285 in the number of samples of oils dealt with, there was an increase in the total number of samples reported upon by the Chemical section from 3,631 to 4,137. The number of samples actually examined, however, was somewhat higher than the latter figure owing to work incidental to the various special investigations which are referred to later. This increase in the general chemical work of the Test House, which has been mainly contributed to by the State Railways and private concerns and individuals, is connected chiefly with the analysis of metals and the examination and tests of paints, varnishes and their ingredients. No material change occurred in the number of samples of coal and creosote examined.

51. **Standardization of oils.**—The work in connection with the standardization of lubricating oils has been continued, and, as anticipated, it is already resulting in a diminution of the number of samples of oils received in connection with tenders.

52. **Standardization of Paints, Varnishes, etc.**—Up to the end of the year 1928-29, 1,422 standard samples of paints, varnishes and similar materials were received in connection with this work. Of these 910 were analysed, and the investigations are continuing. A considerable amount of unremunerative work is involved in these investigations, but it is anticipated that it will eventually result in the elimination of much unnecessary repetition of tests in connection with tenders, as has proved to be the result of the standardization of lubricating oils.

53. **Practical tests of paints, varnishes, etc.**—The exposure tests on panels prepared in previous years were continued, and 98 new panels were prepared and exposed during the year under review. This line of investigation has involved the preparation of 29 samples of paints in the laboratories during the year. In this connection it is of interest to note that until comparatively recently paint manufacturers did not make a practice of utilizing the services of the Test House for the carrying out of exposure tests on their behalf. During 1928-29, however, 17 samples of paints and other protective materials were received from manufacturers for exposure tests, and the increasing importance attached to such tests by those concerned indicates that an appreciable increase of this class of work may be expected.

54. **Investigations.**—Various investigations were carried out on behalf of the Army, the Railway Administrations, the Indian Stores Department itself and private concerns. Of these the following may be mentioned :—

(1) Investigations as to the moisture content and freezing points of benzol-petrol mixtures in connection with engine troubles on aircraft which were experienced in connection with the evacuation of British and other Nationals from Afghanistan.

(2) Investigations in connection with painting difficulties experienced on the Burma Railways.

(3) Investigations regarding the peculiar behaviour of certain grey paints used by the Rohilkund and Kumaon Railway.

(4) Composition and characteristics of hard greases for locomotive axle-boxes, connecting rod big-ends and side-rods.

(5) Composition and characteristics of soluble cutting oils.

(6) Investigations regarding the corrosion of the aluminium linings of tea chests, and of aluminium cartons.

(7) Composition and characteristics of solidified kerosene and castor oils.

(8) Investigations in connection with the revision of existing and the drafting of new specifications.

55. **Plant and apparatus.**—The following items of plant and apparatus were added to the equipment of the Test House during the year :—

1. Herbert automatic file-testing machine.
2. Everett-Edgcumbe cube photometer for spherical candle power tests on electric lamps.
3. Textile yarn examining machine.
4. Weston voltmeters and ammeters.
5. Electric organic combustion furnace.
6. Parr type sodium-peroxide bomb.
7. Paint grinding roller mill.
8. Apparatus for testing the flexibility and adhesive powers of varnishes.
9. A. S. T. M. pattern apparatus for determining the softening point of pitch.

A complete list of the equipment will be found in Appendix XV, and the details of various tests carried out during the year are furnished in Appendix XVII.

CHAPTER VI.

Encouragement of Indian industries and local purchases and other activities of the Department.

56. **Registration of firms at the Headquarters office.**—As a result of the enquiries made during the year under review as to the possibilities of Indian sources of supply, 203 firms were added to the list of " Approved Contractors " and to the lists of firms maintained under the rules for the supply of articles for the public service. The applications of 115 firms for registration were rejected on the ground of their unsuitability as suppliers, or of their ineligibility under the rules for enrolment ; and as a result of a review of the lists in the light of the experience of past years the names of 191 firms were removed. Most of these were found to be of no practical use to the Department, while a few had ceased to exist. The attached statement indicates the total number of firms registered up to the end of the year, classified according to the descriptions of stores dealt with by them.

Descriptions of stores.	Bengal.	Bombay Presidency. Bombay.	Bombay Presidency. Karachi.	Madras.	Punjab.	United Provinces.	Delhi.	Burma.	Bihar and Orissa.	Central Provinces.	North-West Frontier Province.	Indian States.	Total.
Railway material .	66	45	5	10	10	3	7	7	5	..	..	..	158
Hardware . . .	81	57	14	17	19	24	13	10	3	..	..	6	244
Implements and tools .	52	40	10	15	13	4	12	11	2	..	..	3	162
Metals . . .	81	58	15	15	17	9	13	14	5	1	..	3	231

Descriptions of stores.	Bengal.	Bombay Presidency. Bombay.	Bombay Presidency. Karachi.	Madras.	Punjab.	United Provinces.	Delhi.	Burma.	Bihar and Orissa.	Central Provinces.	North-West Frontier Province.	Indian States.	Total.
Mechanical equipment	159	133	18	35	28	13	20	30	4	..	..	8	448
Electrical equipment	98	65	13	22	15	13	15	13	3	..	..	3	260
Oils	48	32	2	14	7	6	4	7	..	..	..	6	126
Paints, colours, enamels and varnishes, etc.	45	43	12	16	5	3	5	7	2	1	..	2	141
Chemicals (excluding medicines and drugs).	41	22	9	7	5	5	6	5	..	..	..	3	103
Textiles :—													
(*a*) Cotton materials	73	70	2	6	23	22	9	6	..	1	..	6	218
(*b*) Woollen materials	24	21	2	5	9	13	1	2	..	..	1	5	83
(*c*) Jute, flax and hemp materials.	52	24	4	2	12	5	1	3	1	1	..	..	105
(*d*) Silk goods	..	..	..	..	..	1	..	..	..	..	..	..	1
Leather goods	17	4	1	2	5	15	3	3	..	..	..	..	50
Structural engineering	43	14	2	6	2	4	3	7	2	..	..	1	84
Miscellaneous stores	181	113	29	35	55	40	37	23	3	8	1	10	535
Medical, surgical and scientific stores and equipment (excluding medicines, chemicals and drugs).	13	3	..	3	2	1	..	..	..	..	..	..	22
Wireless stores	1	1	..	..	..	..	..	1	..	..	..	..	3
Mathematical drawing and surveying instruments and equipment.	9	9	..	..	..	..	1	1	..	..	..	..	20
TOTAL	1,084	754	138	210	227	181	150	150	30	12	2	56	2,994
Deduct overlapping figures appearing for more than one item.	636	410	86	144	101	55	89	80	20	2	..	21	1,644
NET TOTAL	448	344	52	66	126	126	61	70	10	10	2	35	1,350

57. **Registration of firms at local Purchase Circles.**—In addition to the number mentioned above, 95 firms were enlisted for utilization by the Provincial Purchase organizations of the Department. Of these 45 are located at Calcutta, 23 in Bombay, 26 in Karachi, and 1 in Madras.

58. **Advice to manufacturers.**—The efforts made since the constitution of the Department to assist manufacturers in India in improving the quality of their products by means of technical advice and suggestions were continued during the year under review, and the results obtained were encouraging in many cases. Action in this direction was taken in particular in respect of the articles mentioned below, in addition to those mentioned in paragraph 60 of the report for 1927-28 :—

Khaki muslin pugrees.
Electric cables.
Axle boxes, railway.
Locomotive motion details.
Points and crossings and permanent way materials.
Expansion joints for steam pipes.
Belt pulleys.
Locks and handcuffs manufactured at Aligarh.
Brassware and railway carriage fittings.
Paints.
Soap.
Window glass.

In respect of paint, white lead, which was mentioned in the report for 1927-28 as one of the items which were being specially watched, it is of interest to note that the entire demand placed on the Department in 1928-29 for this article was met by the purchase of the Indian made variety. The value of the purchases amounted to Rs. 65,175.

Another interesting example of the success attending the efforts of the Department in this particular direction is the use of a special dye known as "Napthol Red A. S. T. R." in place of the dye ordinarily used ("Turkey Red") for the dyeing of cotton textiles. Mills in India could not produce a cloth dyed with "Turkey Red," and they were in consequence considerably handicapped in their competition with foreign manufacturers of cloth of this colour. In order to overcome the difficulty a special investigation was undertaken by this Department with a view to discovering a suitable substitute dye for "Turkey Red" which could be successfully used by the Indian mills. Various dyes were tested and experimented with, and eventually it was discovered that "Napthol Red A. S. T. R." gave a satisfactory result and could be employed without difficulty by the mills in India. The Army Department has agreed to accept cloth so dyed as a standard, and it has thus been found possible to divert a large volume of business in red dyed cotton cloths from foreign to Indian manufacturers. Other investigations in connection with dyestuffs are proceeding, and it is hoped that the results will have the effect of improving the qualities of dyed textiles and of expanding the scope of manufacture in India.

In paragraphs 20 and 21 mention has been made of the fact that the Department availed itself of every opportunity, consistently with the principles of efficiency and economy, of purchasing articles of Indian origin and manufacture, wholly or partly, in preference to articles manufactured abroad. This action on its part proved of very decided benefit to Indian industries, as will be observed from the following statement which contains particulars of the more important orders for Indian products which were placed during the year 1928-29 :—

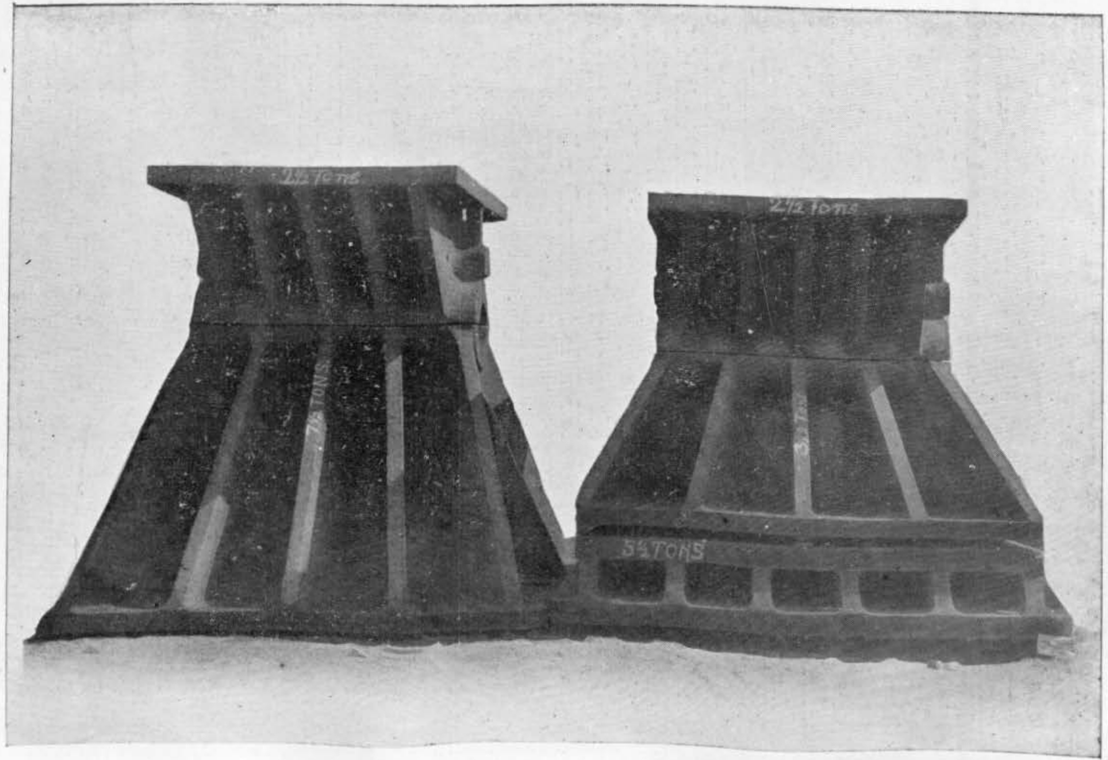
TEXTILES.	Rs.
1. Tents and tent components	19,42,000
2. Blankets, woollen	15,83,000
3. Drill, khaki, coloured, white and grey	15,70,000
4. Serges and great-coat cloth	6,40,000
5. Yarn, woollen and cotton	6,03,000
6. Socks, woollen and cotton	4,14,000
7. Pugree cloth, muslin, nainsook and calico, etc.	3,50,000
8. Waistcoats, cardigans, jerseys and jackets	3,00,000
9. Cordages, ropes and twine	3,00,000
10. Paulins	2,99,000
11. Bags, postal, flax and jute canvas, proofed and unproofed	2,72,000
12. Sheets, barrack and hospital	2,71,000
13. Hessians and gunnies	2,51,000
14. Felt	1,90,000
15. Dosuti	1,83,000
16. Durries, cotton	1,69,000
17. Wool cotton, absorbent, surgical	1,61,000
18. Jhools and rugs	1,13,000
19. Blanketing cloth	89,000
20. Bags, kit	82,000
21. Gloves, worsted (mittens)	76,000
22. Flannelette, Mark III	71,000
23. Gauze, absorbent	71,000
24. Dhoti cloth and sheetings	66,000
25. Putties, woollen and cotton	62,000
26. Oxford cloth	59,000
27. Bandage cloth	50,000
28. Covers, bonnet, for cars and lorries	50,000
29. Comforters and cap comforters	40,000
30. Towels and towelling cloth	38,000
31. Long cloth	37,000
32. Flannel	32,000
33. Dusters	28,000
34. Twill, cotton, khaki and white	27,000
35. Cotton, grey, red, etc.	27,000

TEXTILES—*contd.*	Rs.
36. Cotton-waste	25,000
37. Cases, mattress, pillows, etc.	24,000
38. Carpets	21,000
39. Thread, sewing, cotton	20,000
40. Pillows, hospital, cotton and feather	19,000
41. Kullahs	19,000
42. Bunting	18,000
43. Bags, postal, dosuti and drill	17,000
44. Tape, cotton	14,000
45. Cloths, tea, tray, table, etc.	11,000
46. Rope, manilla and coir	10,400

ENGINEERING.	
47. Steel work for bridges	3,28,000
48. Pipes and specials (C. I.)	1,83,800
49. Cables	1,48,300
50. Sea-going steam launch	94,600
51. Copper wire	69,200
52. 'India' electric fans	61,400
53. Sea-going steel lighters	52,500
54. Steelwork for buildings	51,000
55. Target apparatus	43,000
56. Clack boxes for boilers	27,700

HARDWARE.	
57. Cement, Portland	15,41,500
58. Oil, axle, all weather	8,71,000
59. Oil, linseed	6,08,000
60. Paints, various	4,50,700
61. Oil, castor	4,36,000
62. Turpentine	98,000

	Rs.
Genuine	56,000
Substitute	42,000



STEEL CASTINGS FOR THE BEARINGS OF THE BALLY BRIDGE.

Largest piece weighs 6½ tons and is believed to be the largest steel casting ever cast in India.

HARDWARE—*contd.*	Rs.
63. Road surfacing material	84,000
Colfix . . . Rs. 40,000	
Mexaco . . . 6,000	
Tar and pitch . 38,000	
64. Steel sections, Tatas' only	63,000
65. Soap	59,500
66. Oil, other sorts	59,500
67. Varnishes	40,500
68. Graphite	39,000
69. Safes	30,500
70. Locks of sizes, chiefly padlocks	27,100
71. Tallow	27,000

HARDWARE—*concld.*	Rs.
72. Enamels	26,200
73. Wire netting, 6", hexagonal mesh	23,000
74. Spirit, denatured, methylated	20,500
75. Coal tar for painting purposes	15,000
76. Baling wire	11,700
77. Black japan, acid resisting	10,300
78. Disinfecting fluid	9,600
79. Gold leaf	7,700
80. Enamelware, chiefly sign-boards	7,300

In the next place, various indentors were induced by the Department to accept the following articles of Indian manufacture in preference to those manufactured abroad :—

Bunting.

Water fittings—brass and gun metal, cocks and valves.

Spare parts for Electric fans.

Paint, anticorrosive.

Paint, black.

Enamel, white.

Coal tar and pitch for road making.

Asbestos lagging.

Locks.

Door fittings.

Hand made wire gauze netting.

Oil lamps, hurricane and table.

Glass globes.

Soap.

Equally, manufacturers are pressed to use Indian produced materials and improvements in the fabrication of articles they market, such as railway carriage underframes, wagons, bridges, etc. Facing this page is a photograph of some of the steel castings for the bearings of the Bally Bridge, which, at the instance of the Department, were ordered of Indian manufacture. These are the heaviest steel castings ever produced in India.

59. **Scrutiny of the indents on the India Store Department, London.**—During the year, 1533 indents on the India Store Department, London, of the estimated value of Rs. 6,28,85,361 were examined. Stores to the aggregate value of Rs. 10,41,133 were challenged, of which Rs. 3,26,465 represent the estimated value of articles which could be manufactured in India from materials produced either wholly or partly in India. The result of these challenges was that purchases to the value of Rs. 1,39,093 were diverted to Indian markets, practically the whole of these being entrusted to the Indian Stores Department to carry out. These results are interesting in that they

show a decrease in value of the indents prepared by consuming Departments on the India Store Department, London, and also in that of the items challenged by this Department and of the purchases diverted to the Indian market, thus strengthening the belief expressed in previous reports that the resources of India are now receiving closer attention by indenting Departments than in the past.

60. **Other activities of the Department.**—The activities of the Department are not, it may be mentioned, entirely confined to the purchase and inspection of stores and the work connected therewith, and its services are not infrequently utilized for other purposes. For example, it is continually associated with the work of Railway Board's Standardization Committee. Members of the staff attended all the meetings of that Committee during the year 1928-29, and acted as correspondents. The officiating Chief Controller of Stores acts as the technical adviser to the Government of India in connection with the working of the Indian Boilers Act; and he was appointed to act as Chairman of the Conference of Government Electrical Engineers and Electrical Inspectors which was convened by the Government of India in December 1928 for the purpose of considering what, if any, amendments were required in the Indian Electricity Act of 1910 (Act IX of 1910) as amended by the Indian Electricity (Amendment) Act No. I of 1922 and Act XL of 1923 and the Indian Electricity Rules, 1922. Another officer of the Department also attended this Conference in the capacity of *liaison* between the Conference and the Government of India.

CHAPTER VII.

Finance.

61. **Statistics of revenue and expenditure.**—The following statement exhibits the revenue and expenditure of the Department during each of the four years ending with the year 1928-29 :—

Revenue.

Revenue.	1925-26.	1926-27.	1927-28.	1928-29.
	Rs.	Rs.	Rs.	Rs.
Departmental charges on purchase of stores, I. S. D. orders.	2,66,750	3,39,309	3,48,883	3,39,448
Departmental charges on inspection of stores, I. S. D. orders.	1,63,155	2,04,665	2,43,080	2,39,417
Inspection charges on outside orders, Calcutta Circle of Inspection.	2,22,924	3,23,905	3,34,336	2,22,694
Inspection charges on outside orders, Bombay Circle of Inspection.	1,665	26,265	51,945	64,334
Inspection charges on outside orders, Cawnpore Circle of Inspection.	934	9,390	1,076	374
Inspection charges on outside orders, Karachi Inspection Agency.	1,106	1,379	6,802	30,527
Inspection charges on outside orders and testing fees realized by the Metallurgical Inspectorate.	3,50,150	4,13,140	4,21,980	2,39,867

Revenue—contd.

Revenue.	1925-26.	1926-27.	1927-28.	1928-29.
	Rs.	Rs.	Rs.	Rs.
Testing fees realized by the Government Test House, Calcutta.	1,12,230	1,25,841	1,22,850	1,38,425
Testing fees realized by the Government Test House, Bombay.	..	..	..	517
Miscellaneous receipts	17,174	37,559	44,900	35,262
Deduct refunds	..	—450	—1,958	—1,191
Total gross receipts .	11,36,088	14,81,003	15,73,894	13,09,674
Deduct amount creditable to the Audit Officer, Indian Stores Department.	65,483	1,22,086	1,66,609	..
Net receipts .	10,70,605	13,58,917	14,07,285	13,09,674

Expenditure by units of Appropriation.

	1925-26.	1926-27.	1927-28.	1928-29.
	Rs.	Rs.	Rs.	Rs.
Pay of Officers	5,52,816	5,91,533	6,55,336	7,26,025
Pay of Establishment	4,21,579	5,23,081	5,97,466	6,63,880
Allowances, honoraria, etc.	1,45,497	1,69,106	1,77,028	1,96,297
Supplies and Services	63,459	69,864	87,994	70,780
Contingencies	1,02,350	1,29,757	1,19,002	1,13,400
Works	2,00,000	91,854	9,558	36,025
Grants-in-aid, Contributions, etc. . . .	..	2,136	600	..
Total expenditure in India .	14,85,701	15,77,331	16,46,984	18,06,407
Total revenue, gross .	11,36,088	14,81,003	15,73,894	13,09,674
Total revenue, net .	10,70,605	13,58,917	14,07,285	..
Defit, gross	3,49,613	96,328	73,090	4,96,733
Deficit, net	4,15,096	2,18,414	2,39,699	..

N.B.—The figures for the year 1928-29 are not the final figures of the year as the accounts have not yet been closed. The previous year's figures have been corrected to represent the final revenue and expenditure of the year.

62. **Financial position.**—The accounts for 1927-28 as presented in paragraph 62 of the report for that year showed that the revenue of the Department amounted to Rs. 15,63,909 and the expenditure to Rs. 16,17,503, with a consequential deficit of Rs. 53,594. As was explained, however, these were not the final figures. The final accounts which were subsequently compiled closed with a net deficit of Rs. 2,39,699, after deducting from the revenue realized the share creditable to the Audit Officer, Indian Stores Department, for the work undertaken by him in connection with the financial

operations of the Department. This is a larger deficit than the deficits which resulted during the two preceding years, 1925-26 and 1926-27, after excluding the expenditure on capital works incurred during those years, and is due partly to an increase of the share of the receipts credited to the Audit Department which exceeded the corresponding figures of the previous two years by over Rs. 44,000 and over Rs. 1,00,000 respectively, and partly to the relatively larger increase of expenditure during 1927-28. The accounts for 1928-29 reproduced in the statement above, which are not complete, exhibit a still more unfavourable position, notwithstanding the fact that the expenditure of the Department, excluding the capital cost of the new electrical laboratory at the Government Test House at Alipore, did not increase to the same extent as in 1927-28, and the large deficit of approximately four and three-quarter lakhs of rupees, exclusive of the capital expenditure referred to, will be materially increased after the deduction from the revenue figure of the Audit share of the receipts of the Department. The main cause of this set-back is the labour unrest during 1928 which, as has been shown, seriously affected the work of the Calcutta Inspection Circle and the Metallurgical Inspectorate, two of the most important and hitherto consistently progressive organizations of the Department. As a result, the revenue of these two Inspectorates derived from work undertaken on behalf of authorities who make their own purchases fell to the extent of Rs. 2,93,755 below that realized from the same source during the year 1927-28, instead of having substantially exceeded the figure of that year, as it should have done in consequence of the increase of the business which was entrusted to them. Another contributory cause of the deterioration of the financial position, though not so serious in its effect as the one just referred to, is the shortening of market prices and the more economical purchases effected thereby and through the purchase of cheaper substitutes for certain articles previously bought to which reference has been made in Chapter III. It will be remembered that the charges made for the utilization of the services of the Department in the purchase of stores, and also in the inspection of stores so purchased, are based on *ad valorem* rates. Consequently, any economy in purchase must react in the direction of reducing the income of the Department. This is a point which should not, therefore, be overlooked in considering the financial position of the Department. If due allowance is made for all these factors, the financial position of the Department at the end of the year 1928-29, though unsatisfactory, does not give any real cause for anxiety. There is no doubt that the business of the Department has definitely taken an upward course, and, given normal industrial conditions, there is every prospect of a substantial improvement in its finances during the ensuing year. As explained, however, in previous reports, the Department must be utilized to an appreciably larger extent than at present for the purchase of stores in regular demand before it can hope to secure financial equilibrium in the strict commercial sense.

K. M. KIRKHOPE,

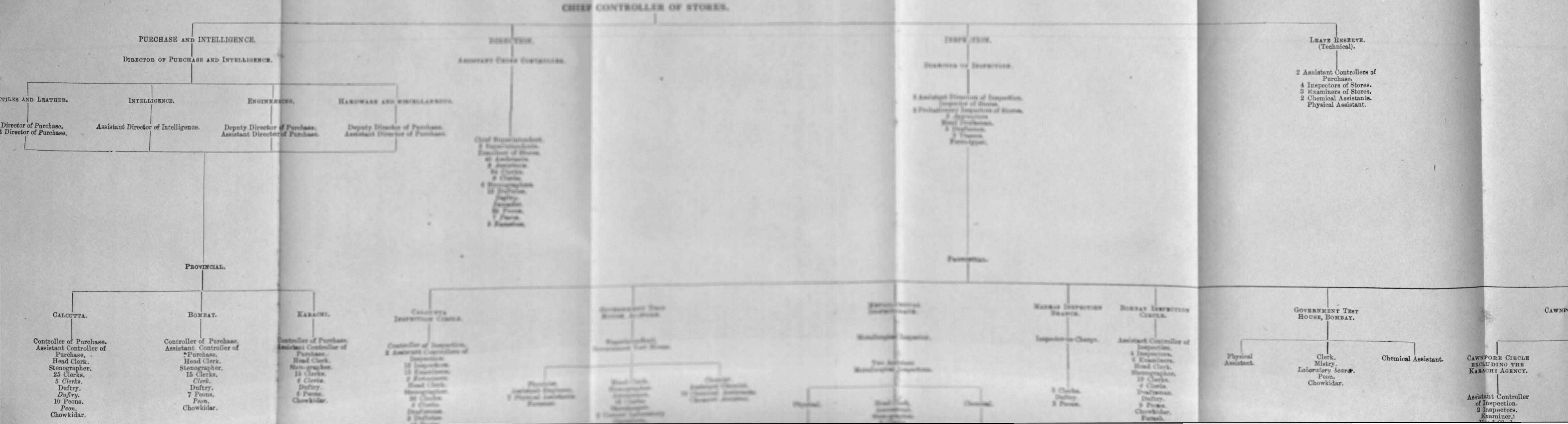
SIMLA,

Dated the 13th June 1929.

Offg. Chief Controller of Stores,

Indian Stores Department.

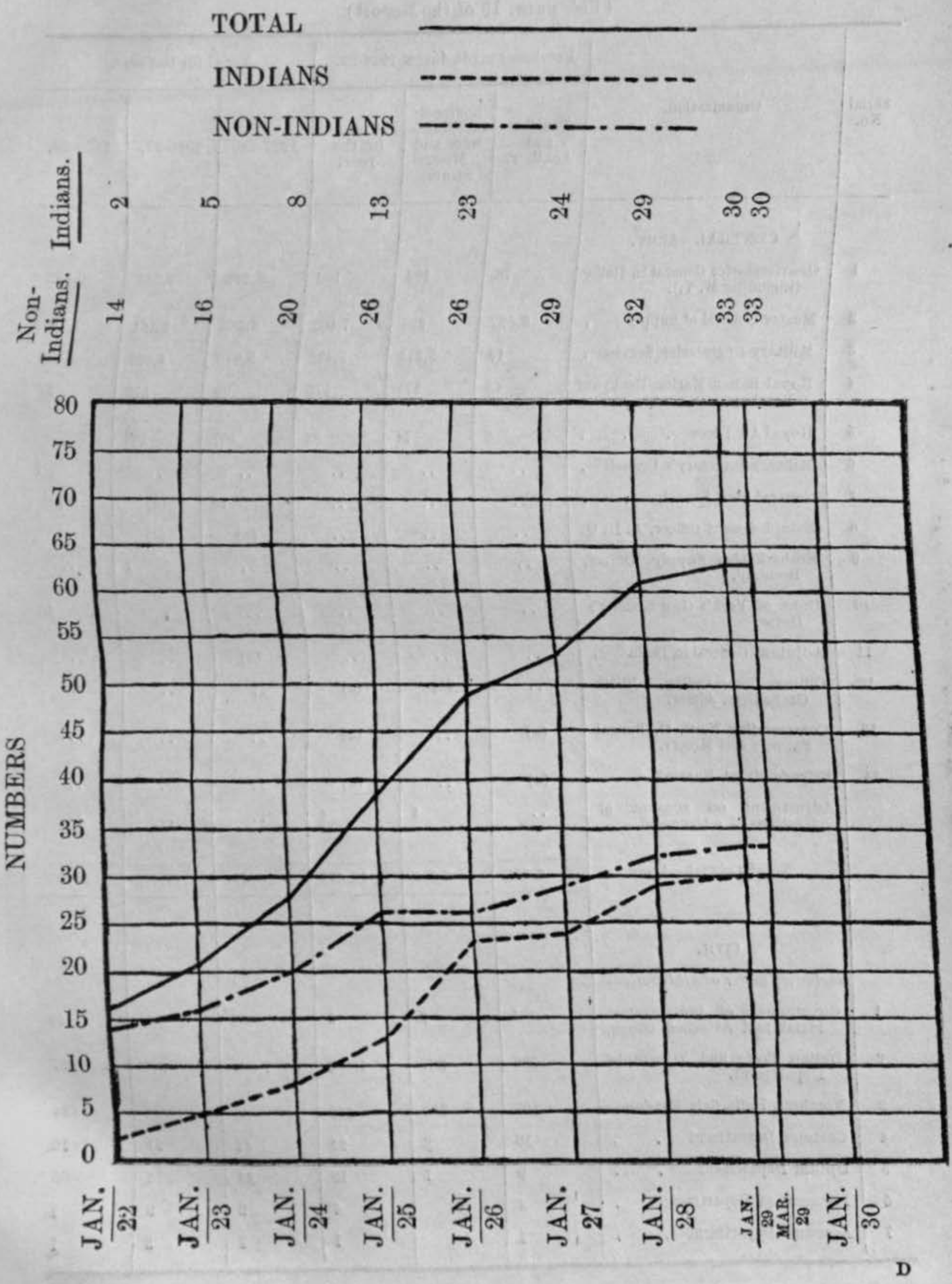
ORGANIZATION
OF
The Indian Stores Department as it stood on the 31st March 1929.



APPENDIX II.

INDIAN STORES DEPARTMENT
GAZETTED STAFF
UP TO 31st March 1929.

(*Vide* paragraph 11 of the report.)



APPENDIX III.

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years.

(*Vide* para. 19 of the Report).

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	CENTRAL—ARMY.						
1	Quartermaster General in India (including M. T.).	78	102	180	2,298	9,242	6,152
2	Master General of Supply .	6,827	275	7,102	6,586	3,161	1,716
3	Military Engineering Service .	19	5,313	5,432	5,613	4,808	3,856
4	Royal Indian Marine Dockyard, Bombay.	43	535	578	539	119	27
5	Royal Air Force . . .	8	74	82	557	131	..
6	Military Secretary's Branch .	..	..	..	..	..	1
7	General Staff Branch . .	..	..	..	18	(a)	(a)
8	Establishment Officer, A. H. Q.	..	..	..	(a)	(a)	(a)
9	Embarkation Supply Officer, Bombay.	..	..	..	..	1	..
10	Duke of York's Own Skinner's Horse.	..	..	..	..	..	16
11	Adjutant General in India .	..	..	..	(a)	..	..
12	Officer Commanding, 10/4th Grenadiers, Ajmer.	..	(a)	(a)	..	..	..
13	Commanding K. G. O. Bengal Sappers and Miners.	(a)	..	(a)	..	..	..
14	Brigade Major, Razmak. .	(a)	..	(a)	..	..	..
	Adjustment on account of fractions of a thousand.	..	1	1	..	..	..
	Total Central—Army .	6,975	6,300	13,275	15,611	17,462	11,768
	CIVIL.						
	(including minor administrations).						
1	Government of India Secretariat and Attached offices.	1	2	3	84	48	59
2	Indian Posts and Telegraphs Department.	796	207	1,003	1,084	819	957
3	Northern India Salt Revenue.	167	150	317	83	283	434
4	Customs Department . .	19	2	21	44	21	10
5	Opium Department . .	9	1	10	44	18	60
6	Income-Tax Department .	4	(a)	4	2	3	1
7	Accounts Department . .	1	(a)	1	1	3	1

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	CIVIL—*contd.*						
8	Currency Department	(a)	..	(a)	5	3	(a)
9	His Majesty's Mints, Calcutta and Bombay.	..	—1	—1	48	4	3
10	Security Printing Department	(a)	86	86	73	64	7
11	Printing, Stationery and Stamps.	25	17	42	40	77	61
12	Geological Survey	..	(a)	(a)	..	..	(a)
13	Mining Department	4	33	37	48	35	..
14	Meteorological Department	(a)	8	8	2	2	..
15	Archaeological Department	..	2	2	18	10	1
16	Survey of India	49	11	60	103	65	8
17	Director-General, Indian Medical Service.	373	..	373	220	226	292
18	Superintendent, Viceregal Estates.	1	1	2	(a)	1	..
19	P. W. D. Simla Imperial Circle	(a)	15	15	24	17	17
20	Inspector-General of Forests, Dehra Dun.	..	..	..	1	11	..
21	Forest Economist	..	2	2	..	..	..
22	Forest Research Institute, Dehra Dun.	..	6	6	..	13	19
23	Central Research Institute, Kasauli.	(a)	9	9	..	..	..
24	Malaria Survey of India, Kasauli.	..	22	22	..	..	..
25	X'Ray Institute, Dehra Dun.	..	..	..	..	..	..
26	Agricultural Research Institute, Pusa.	..	1	1	..	6	17
27	Chief Inspector of Explosives, Calcutta.	..	..	..	1	..	..
28	Veterinary Research Institute, Muktesar.	5	8	13	14	6	5
29	Dairy Expert, Bangalore	..	..	..	..	2	..
30	Physiological Chemist, Bangalore.	..	..	..	(a)	..	..
31	Royal Botanical Gardens	..	..	..	..	3	4

APPENDIX III—*contd.*

***Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years*—contd.**

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	CIVIL—*contd.*						
32	Indian Central Cotton Committee.	..	..	..	..	..	18
33	Chief Commissioner, Delhi .	..	(*a*)	(*a*)	..	..	1
34	Police Department, Delhi .	..	..	..	4	9	..
35	Public Works Department, Delhi.	22	1,087	1,109	913	728	383
36	Imperial Works Division, Dehra Dun.	1	36	37	16	114	11
37	Andamans Commission . .	62	344	406	234	241	124
38	Forest Officer, Andamans .	..	10	10	..	..	..
39	Captain Superintendent, I. M. M. T. S., Dufferin.	8	17	25	3	..	..
	NORTH WEST FRONTIER PROVINCE.						
40	Revenue Department . .	..	(*a*)	(*a*)	(*a*)	..	..
41	Agriculture Department. .	..	..	..	(*a*)	..	..
42	Jail Department . . .	1	..	1	..	..	..
43	Police Department . .	48	..	48	62	61	109
44	Public Works Department .	..	85	85	2	(*a*)	..
45	Medical Department . .	..	(*a*)	(*a*)	..	..	..
	COORG.						
46	Chief Commissioner . .	3	13	16	4	3	3
47	Forest Department . .	3	(*a*)	3	(*a*)	..	..
48	Public Works Department .	..	1	1	(*a*)	..	..
49	Police Department . .	1	..	1	..	..	..
50	Baluchistan Public Works Department.	(*a*)	12	12	17	(*a*)	..
51	Baluchistan Agency . .	..	(*a*)	(*a*)	3	9	2
52	Central India Agency, Public Works Department.	..	16	16	21	1	..
53	Rajputana Agency . .	..	1	1	11	8	9
54	Western India States Agency	2	6	8	..	..	..
55	Persian Gulf Agency . .	..	..	..	(*a*)	..	..

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29. Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	Total for the year. 1927-28.	1926-27.	1925-26.
	CIVIL—*concld.*						
	Coorg—*contd.*						
56	Agent to the Governor-General in Central India.	..	2	2	2	5	1
57	His Britannic Majesty's Consul for Seistan.	..	(*a*)	(*a*)	..	..	(*a*)
58	British Envoy at the Court of Nepal.	..	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
59	Resident in Hyderabad	1	..	1	..	..	..
60	Resident in Mysore	..	..	..	(*a*)	..	..
61	Political Agent, Gilgit	..	..	..	(*a*)	..	..
62	Political Agent, Loralai	..	19	19	..	..	..
63	Political Agent, Zhob, Fort Sandeman.	..	..	..	..	(*a*)	..
64	Political Agent, Punjab States	..	(*a*)	..	..	..	..
65	Political Agent, Central Provinces Feudatory States.	..	..	..	..	..	(*a*)
66	Political Agent Sub-Treasury Officer, Eastern Kathiawar.	(*a*)	..	(*a*)	(*a*)	..	..
67	Political Officer, Sikkim	..	3	3	..	5	..
68	Political Officer, Balipara Frontier Tracts, Lokra.	(*a*)	..	(*a*)	..	..	..
69	Protector of Emigrants, Bombay.	(*a*)	(*a*)	(*a*)	..	..	..
	Adjustment on account of fractions of a thousand.	1	1	2	..	..	..
	Total Central—Civil	1,607	2,235	3,842	3,181	2,922	2,617
	RAILWAYS.						
	State-worked Railways.						
1	North Western Railway	883	1,909	2,792	3,236	2,879	1,577
2	Eastern Bengal Railway	55	1,431	1,486	404	36	13
3	East Indian Railway (Oudh and Rohilkhund including).	768	2,349	3,117	2,144	2,238	1,617
4	Great Indian Peninsula Railway.	315	2,006	2,321	1,181	1,865	121
5	Aden Railway	..	1	1	(*a*)	5	..
	Adjustment on account of fractions of a thousand.	..	—1	—1	..	..	..
	Total State-worked Railways	2,021	7,695	9,716	6,965	7,023	3,328

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27	1925-26.
	RAILWAYS—*contd.*						
	Company-worked Railways.						
1	Assam Bengal Railway . .	24	316	340	211	205	77
2	Bombay, Baroda and Central India Railway.	..	..	..	(*b*)—3	35	3
3	South Indian Railway . .	..	114	114	104	74	1
4	Bengal Nagpur Railway .	..	..	..	14	45	730
5	Madras and Southern Mahratta Railway.	..	139	139	120	50	..
6	Bengal and North-Western Railway.	..	..	..	..	33	..
7	Sind Railway	..	..	..	..	(*a*)	..
8	His Exalted Highness the Nizam's Guaranteed State Railway.	(*a*)	6	6	54	33	1
9	Burma Railways . . .	..	87	87	18	39	67
10	Barsi Light Railway . .	..	..	..	13	..	..
	Total Company-worked Railways.	24	662	686	531	514	879
	Indian State-worked Railways.						
1	Mysore Railway	..	2	2	115	5	..
2	Jodhpur Railway . . .	..	(*a*)	(*a*)	..	(*a*)	..
	Adjustment on account of fractions of a thousand.	..	1	1	..	..	..
	Total Indian State-worked Railways.	..	3	3	115	5	..
	Total Railways .	2,045	8,360	10,405	7,611	7,542	4,207
	PROVINCIAL.						
	Madras.						
1	Public Works Department .	1	188	189	43	940	9
2	Agriculture Department .	(*a*)	7	7	5	(*a*)	..
3	Forest Department . .	..	..	..	3	2	..
4	Police Department . .	6	1	7	8	1	(*a*)
5	Accounts Department . .	..	(*a*)	(*a*)	..	..	..

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	PROVINCIAL—*contd.*						
	Madras—contd.						
6	Jail Department . . .	14	1	15	14	(*a*)	1
7	Printing and Stationery Department.	..	(*a*)	(*a*)	2	2	2
8	Education Department . .	..	23	23	(*a*)	(*a*)	(*a*)
9	Medical Department . .	..	..	..	(*a*)	1	(*a*)
10	Revenue Department . .	..	(*a*)	(*a*)	..	(*a*)	..
11	Judicial Department . .	..	(*a*)	(*a*)	..	..	..
	Adjustment on account of fractions of a thousand.	..	—1	..	..	..	..
	Total Madras .	21	219	240	75	946	12
	Bombay.						
1	Public Works Department (Lloyd Barrage).	63	3,657	3,720	4,232	3,311	3,777
2	Public Works Department .	1	241	242	271	781	165
3	Agriculture Department .	..	..	..	..	3	13
4	Forest Department . .	(*a*)	18	18	20	33	32
5	Police Department . .	70	..	70	28	45	62
6	Jail Department . . .	164	4	168	97	113	166
7	Printing and Stationery Department.	9	5	14	13	10	19
8	Development Department .	..	10	10	3	..	(*a*)
9	Medical Department . .	(*a*)	3	3	3	1	(*a*)
10	Sanitary Department . .	(*a*)	5	5	(*a*)	6	16
11	Revenue Department .	(*a*)	..	(*a*)	1	..	1
12	Salt and Excise Department .	4	9	13	3	3	..
13	Judicial Department . .	..	..	..	..	..	(*a*)
14	Political Department . .	..	..	..	..	..	1
	Adjustment on account of fractions of a thousand.	2	..	2	1	..	..
	Total Bombay .	313	3,952	4,265	4,672	4,306	4,251

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	PROVINCIAL—*contd.*						
	Bengal.						
1	Public Works Department .	(*a*)	494	494	218	23	1
2	Forest Department . .	(*a*)	4	4	1	11	1
3	Police Department . .	5	8	13	15	1	1
4	Jail Department . . .	..	9	9	32	52	16
5	Education Department . .	..	9	9	(*a*)	1	6
6	Sanitary Department . .	..	(*a*)	(*a*)	(*a*)	1	..
7	Revenue Department . .	(*a*)	1	1	(*a*)	(*a*)	..
8	Excise Department . .	..	..	..	..	(*a*)	..
9	Judicial Department . .	..	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
10	Marine Department . .	..	..	..	6	..	..
11	Superintendent, Governor's Estate.	..	(*a*)	(*a*)	4	2	1
12	Military Secretary to His Excellency the Governor.	..	..	..	..	..	(*a*)
13	Cinchona Cultivation . .	..	2	2	3	1	..
	Total Bengal .	5	527	532	279	92	26
	United Provinces.						
1	Public Works Department .	..	574	574	9	483	60
2	Forest Department . .	..	(*a*)	(*a*)	2	(*a*)	..
3	Printing Department . .	..	..	..	..	..	(*a*)
4	Medical Department . .	..	..	..	..	..	(*a*)
5	Revenue Department . .	..	..	..	..	..	(*a*)
6	Accounts Department . .	..	(*a*)	(*a*)	..	..	..
7	Judicial Department . .	..	..	..	(*a*)	..	..
	Adjustment on account of fractions of a thousand.	..	1	1	..	..	..
	Total United Provinces .	..	575	575	11	483	60

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	PROVINCIAL—*contd.*						
	Punjab.						
1	Public Works Department (including Sutlej Valley Project).	18	1,166	1,184	3,460	2,795	1,728
2	Public Works Department (Hydro-Electric Branch).	5	447	452	678	907	58
3	Agricultural Department	9	15	24	18	88	21
4	Veterinary Department	2	(a)	2	(a)	..	..
5	Forest Department	..	6	6	(a)	21	..
6	Police Department	58	(a)	58	37	39	47
7	Jail Department	491	16	507	254	354	212
8	Printing Department	..	..	..	..	(a)	..
9	Education Department	..	(a)	(a)	8	(a)	3
10	Industries Department	..	20	20	161	127	20
11	Development Department	..	..	..	..	1	..
12	Sanitary Department	(a)	..	(a)	1	(a)	(a)
13	Finance Department	..	..	..	..	..	22
14	Revenue Department	..	(a)	(a)	1	(a)	(a)
15	Judicial Department	..	..	..	(a)	1	(a)
16	Registration Department	..	..	..	..		(a)
17	Unclassified items	..	..	..	19	18	..
	Adjustment on account of fractions of a thousand.	..	1	1	—1	..	..
	Total Punjab	583	1,671	2,254	4,636	4,351	2,111
	Bihar and Orissa.						
1	Public Works Department	(a)	21	21	43	37	2
2	Agricultural Department	..	(a)	(a)	(a)	(a)	..
3	Police Department	..	(a)	(a)	(a)	(a)	3
4	Jail Department	3	1	4	5	9	76
5	Printing Department	4	(a)	4	1	2	3
6	Industries Department	..	..	..	(a)	10	..
7	Medical Department	..	..	..	..	..	1

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	PROVINCIAL—*contd.*						
	Bihar and Orissa—contd.						
8	Veterinary Department	..	..	..	..	(*a*)	..
9	Education Department	..	1	1	3	..	..
	Adjustment on account of fractions of a thousand.	1	1	2	1	2	..
	Total Bihar and Orissa	8	24	32	53	60	85
	Burma.						
1	Public Works Department	3	7	10	2	11	..
2	Police Department	—7	..	—7	681	21	361
3	Jail Department	3	..	3	3	4	5
4	Printing Department	6	1	7	7	6	3
5	Marine Department	..	..	..	(*a*)	..	..
	Adjustment on account of fractions of a thousand.	1	..	1	..	..	..
	Total Burma	6	8	14	693	42	374
	Central Provinces.						
1	Public Works Department	(*a*)	173	173	101	732	199
2	Forest Department	..	1	1	1	(*a*)	(*a*)
3	Jail Department	3	..	3	8	4	(*a*)
4	Industries Department	..	11	11	6	4	..
5	Medical Department	1	..	1	1	(*a*)	(*a*)
6	Sanitary Department	..	..	..	..	(*a*)	..
7	Agricultural Department	..	3	3	(*a*)	..	..
8	Revenue Department	..	1	1	2	1	1
9	Excise Department	..	..	..	..	..	(*a*)
10	Education Department	..	1	1	..	..	..
11	Judicial Department	..	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
12	Printing Department	..	..	..	(*a*)	..	..

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29. Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	Total for the year. 1927-28.	1926-27.	1925-26.
	PROVINCIAL—*concld.*						
	Central Provinces—contd.						
13	Police Department	..	3	3	1	..	..
14	Central Provinces Secretariat	..	..	..	(*a*)	..	..
	Adjustment on account of fractions of a thousand.	..	—1	—1	1	2	..
	Total Central Provinces	4	192	196	121	743	200
	Assam.						
1	Public Works Department	2	10	12	41	8	6
2	Forest Department	..	2	2	1	1	(*a*)
3	Police Department	47	1	48	79	70	81
4	Jail Department	9	(*a*)	9	28	24	2
5	Printing Department	..	..	..	..	6	4
6	Education Department	..	3	3	(*a*)	..	..
7	Medical Department	..	(*a*)	(*a*)	(*a*)	(*a*)	..
8	Revenue Department	..	1	1	1	(*a*)	(*a*)
9	Political Department	..	..	..	..	1	1
	Adjustment on account of fractions of a thousand.	..	—1	—1	1	..	..
	Total—Assam	58	16	74	151	110	94
	Total Provincial	998	7,184	8,182	10,690	11,133	7,213
	INDIAN STATES.						
1	Jammu and Kashmir	..	..	..	7	16	21
2	Jaipur	..	165	165	42	74	726
3	Mysore	..	15	15	13	4	18
4	Indore	..	..	..	..	..	3
5	Rajkot	..	..	..	..	..	2
6	Balapur	..	..	..	..	..	1

APPENDIX III—*contd.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—contd.

(*Vide* para. 19 of the Report)—*contd.*

Serial No.	Organization.	Purchases made during 1928-29. Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	Total for the year. 1927-28.	1926-27.	1925-26.
	INDIAN STATES—*contd.*						
7	Bahawalpur	..	26	26	6	..	..
8	Palanpur	..	..	..	(*a*)	..	..
9	His Exalted Highness the Nizam's Government.	..	(*a*)	(*a*)	2	..	..
	Adjustment on account of fractions of a thousand.	..	1	1	..	1	..
	Total Indian States	..	207	207	70	95	771
	QUASI-PUBLIC BODIES.						
1	City Board, Mussoorie	..	31	31	3	694	42
2	City Board, Dehra Dun	..	..	..	44	4	..
3	Municipal Committee, Bannu	..	(*a*)	(*a*)	..	(*a*)	25
4	Municipal Committee, Simla	(*a*)	62	62	87	10	5
5	Municipal Committee, Delhi	..	(*a*)	(*a*)	5	2	..
6	Municipal Committee, Karachi	..	28	28	..	..	..
7	Municipal Committee, Sukkur	..	11	11	..	..	..
8	Municipal Committee, Jorhat	..	..	..	..	(*a*)	..
9	Municipal Committee, Ootacamund.	..	1	1	..	..	..
10	District Board, Muzaffarnagar	..	..	..	..	(*a*)	(*a*)
11	District Board, Dera Ismail Khan.	..	..	..	1	..	..
12	Port Commissioners, Calcutta	..	(*a*)	(*a*)	..	19	(*a*)
13	Port Trust, Madras	..	2	2	2	(*a*)	..
14	Union Board, Manikgunj	..	(*a*)	(*a*)	..	..	..
15	North-West Frontier Province Frontier Constabulary.	..	..	..	..	..	7
16	Trustees of the English Church and Cemetery, Broach.	..	..	..	..	..	(*a*)
17	Lac Research Institute, Ranchi	..	2	2	..	..	..

APPENDIX III—*concld.*

Statement showing the value (in thousands of rupees) of stores purchased on behalf of various authorities utilizing the services of the Indian Stores Department during the year 1928-29 and three preceding years—concld.

(*Vide* para. 19 of the Report)—*concld.*

Serial No.	Organization.	Purchases made during 1928-29.			Total for the year.		
		Textiles and Leather.	Engineering, Hardware and Misc. Stores.	Total for the year.	1927-28.	1926-27.	1925-26.
	QUASI-PUBLIC BODIES—*concld.*						
18	Health Association, Calcutta .	..	(*a*)	(*a*)	..	..	..
19	District Council, Chindwara .	(*a*)	..	(*a*)	..	..	..
	Adjustment on account of fractions of a thousand.	..	..	..	..	—1	..
	Total Quasi-Public Bodies .	(*a*)	137	137	142	728	79
	ABSTRACT.						
	Total Central—Army . .	6,975	6,300	13,275	15,611	17,462	11,768
	Total Central—Civil . .	1,607	2,235	3,842	3,181	2,922	2,617
	Total Railways . . .	2,045	8,360	10,405	7,611	7,542	4,207
	Total Provincial . . .	998	7,184	8,182	10,690	11,133	7,213
	Total Indian States . .	..	207	207	70	95	771
	Total Public Bodies . .	(*a*)	137	137	142	728	79
	Adjustment on account of fractions of a thousand.	..	..	..	..	..	13
	GRAND TOTAL .	11,625	24,423	36,048	37,305	39,882	26,668

APPENDIX IV.

Statement showing the value of the various classes of purchases (indigenous and imported separately) made during the year 1928-29 as compared with three previous years.

(*Vide* paragraph 20 of the report.)

	1928-29.	1927-28.	1926-27.	1925-26.
	Rs.	Rs.	Rs.	Rs.
I.—TEXTILES AND LEATHER.				
(*a*) ***Stores purchased in the Indian market***—				
(i) *Cotton*—				
Indigenous	60,62,761 (96·3%)	66,28,109 (96·4%)	85,89,868 (96·9%)	57,16,336 (97·3%)
Imported	2,35,184 (3·7%)	2,45,409 (3·6%)	2,76,677 (3·1%)	1,55,264 (2·7%)
(ii) *Woollen*—				
Indigenous	39,31,597 (99·1%)	36,81,336 (99·5%)	51,68,861 (97·5%)	39,49,537 (98·8%)
Imported	37,148 (0·9%)	19,656 (0·5%)	1,31,379 (2·5%)	46,419 (1·2%)
(iii) *Jute, hemp, etc.*—				
Indigenous	12,88,918 (96·6%)	11,56,483 (91·1%)	19,75,785 (94·7%)	19,11,724 (96·0%)
Imported	45,454 (3·4%)	1,13,179 (8·9%)	1,10,831 (5·3%)	80,568 (4·0%)
(iv) *Leather*—				
Indigenous	17,613 (77·8%)	25,063 (95·5%)	19,370 (62·7%)	20,826 (96·1%)

Imported	5,025 (22·2%)	1,177 (4·5%)	11,509 (37·3%)	842 (3·9%)
(b) Imported stores purchased through the Director General of Stores.	....	....	....	....
Total { Indigenous	1,13,00,889 (97·2%)	1,14,90,991 (96·8%)	1,57,53,884 (96·7%)	1,15,98,423 (97·6%)
Total { Imported	3,22,811 (2·8%)	3,79,421 (3·2%)	5,30,396 (3·3%)	2,83,093 (2·4%)
Total	1,16,23,700	1,18,70,412	1,62,84,280	1,18,81,516
(c) Stores purchased from Government Departments	1,273	11,597	2,013	....
Total textiles and leather	1,16,24,973	1,18,82,009	1,62,86,293	1,18,81,516
II.—Engineering and Miscellaneous Stores.				
(a) Stores purchased in the Indian market	2,43,26,784	2,54,18,062	2,31,17,653	1,47,03,617
(b) Stores purchased direct from outside India	25,500	....	4,36,101	....
(c) Stores purchased from Government Departments	70,817	4,601	42,198	82,800
Total Engineering and Miscellaneous Stores	2,44,23,101	2,54,22,663	2,35,95,952	1,47,86,417
Grand Total	3,60,48,074	3,73,04,672	3,98,82,245	2,66,67,933

APPENDIX V.

Value in Rupees of stores purchased in each Province during the year 1928-29.

(*Vide* Paragraph 22 of the Report.)

Cotton Materials. Total Rs. 62,97,945.

Province	Value
Assam	*Nil.*
Burma	*Nil.*
Bihar and Orissa	*Nil.*
Mysore	2,373
Baroda	5,126
Central Provinces	12,310
Punjab	4,31,356
Delhi	7,36,265
Bengal	7,57,651
Bombay	9,05,988
Madras	12,02,804
United Provinces	22,44,072

Woollen materials. Total Rs. 39,68,745.

Province	Value
Assam	*Nil.*
Burma	*Nil.*
Central Provinces	*Nil.*
Bihar and Orissa	*Nil.*
Delhi	36,103
Madras	2,06,541
Bengal	3,06,473
Punjab	9,08,900
Bombay	10,86,474
United Provinces	14,24,254

Jute, flax and hemp materials. Total Rs. 13,34,372.

Province	Value
Assam	*Nil.*
Burma	*Nil*
Central Provinces	*Nil.*
Bihar and Orissa	*Nil.*
Madras	2,768
Punjab	10,470
Delhi	18,289
Bombay	73,357
United Provinces	88,334
Bengal	11,41,154

Leather goods. Total Rs. 22,638.

Province	Value
Delhi	*Nil.*
Assam	*Nil.*
Burma	*Nil.*
Central Provinces	*Nil.*
Bihar and Orissa	*Nil.*
Gwalior	300
Madras	440
Bengal	1,856
Bombay	4,908
Punjab	5,570
United Provinces	9,564

Engineering, Hardw[illegible] Sto[illegible] Total Rs. [illegible]

Province	Value
Aundh State	541
Assam	4,222
Central Provinces	44,178
Burma	80,336
United Provinces	1,87,367

APPENDIX VI.

Value of Stores purchased.

(*i*) Head Quarters.

(*Vide* paragraph 19 of the Report.).

Note.—The diagrams represent the fees earned and not those actually adjusted during the year.

1925-26. Fees earned. Rs. 2,32,540

	Rs.
Textiles and leather . . .	1,07,14,853
Engineering and miscellaneous .	1,25,39,162
Total .	2,32,54,015

1926-27. Fees earned. Rs. 3,57,605

	Rs.
Textiles and leather . . .	1,50,50,645
Engineering and miscellaneous .	2,07,09,888
Total .	3,57,60,533

1927-28. Fees earned. Rs. 3,26,568

	Rs.
Textiles and leather . . .	1,09,85,142
Engineering and miscellaneous .	2,16,71,638
Total .	3,26,56,780

1928-29. Fees earned. Rs. 3,16,263

	Rs.
Textiles and leather . . .	1,09,13,271
Engineering and miscellaneous .	2,07,13,066
Total .	3,16,26,337

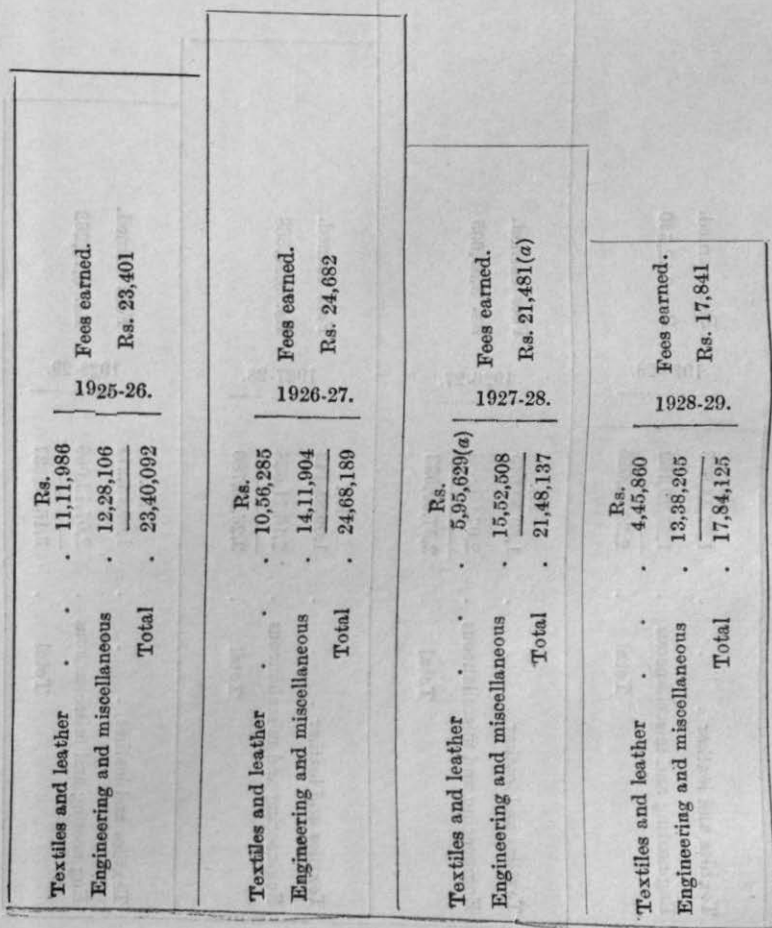
VI—(*ii*) CALCUTTA PURCHASE CIRCLE.

(*Opened in May 1924.*)

(*Vide* paragraph 19 of the Report.)

(*a*) The figures shewn in previous report have been revised on account of adjustments subsequently made.

NOTE.—The diagrams represent the fees earned and not those actually adjusted during the year.



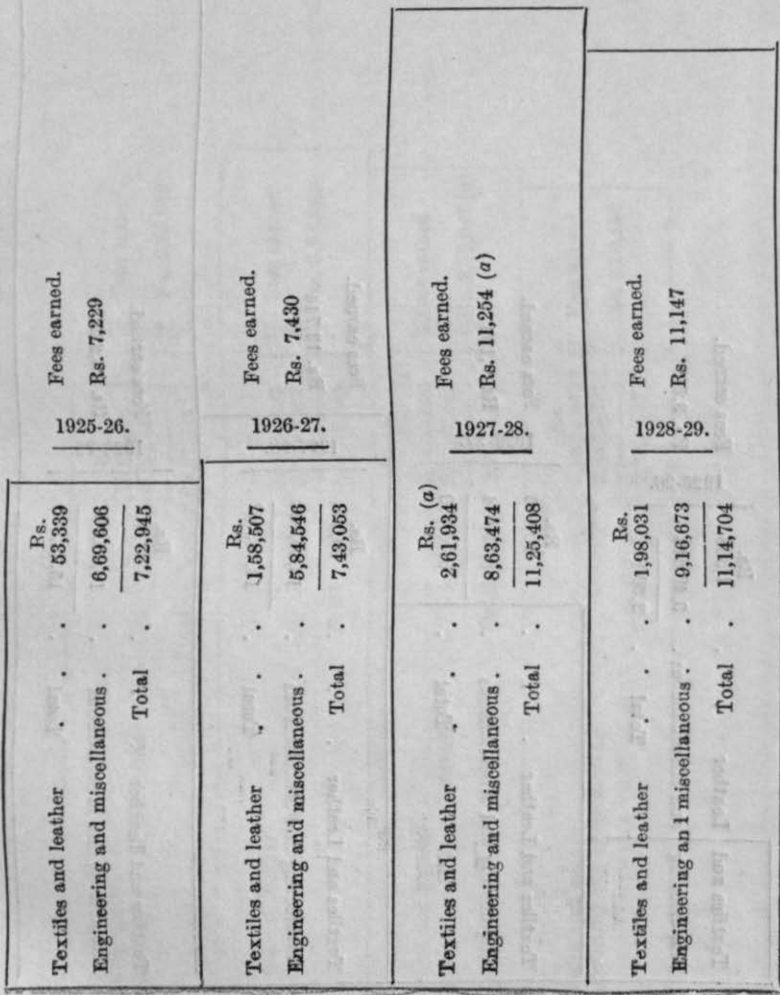
VI—(*iii*) Bombay Purchase Circle.

(*Opened in September 1924.*)

(*Vide* paragraph 19 of the Report.)

(*a*) The figures shown in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent the fees earned and not those actually adjusted during the year.



VI—(iv) Karachi Purchase Agency.

(*Opened in September 1925.*)

(*Vide* paragraph 19 of the Report.)

Note.—The diagrams represent the fees earned and not those actually adjusted during the year.

Year	Item	Rs.	Fees earned
1925-26.	Textiles and Leather	1,338	Rs. 3,509
	Engineering and Miscellaneous	3,49,543	
	Total	3,50,881	
1926-27.	Textiles and Leather	20,856	Rs. 9,105
	Engineering and Miscellaneous	8,89,614	
	Total	9,10,470	
1927-28.	Textiles and Leather	39,304	Rs. 13,744
	Engineering and Miscellaneous	13,35,043	
	Total	13,74,347	
1928-29.	Textiles and Leather	67,811	Rs. 15,229.
	Engineering and Miscellaneous	14,55,097	
	Total	15,22,908	

VI—(*v*) Abstract.

(*Vide* paragraph 19 of the Report.)

(*a*) The figures shewn in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent the fees earned and not those actually adjusted during the year.

1925-26. Fees earned. Rs. 2,66,679

	Rs.
Textiles and leather	1,18,81,516
Engineering and miscellaneous	1,47,86,417
Total	2,66,67,933

1926-27. Fees earned Rs. 3,98,822

	Rs.
Textiles and leather	1,62,86,293
Engineering and miscellaneous	2,35,95,952
Total	3,98,82,245

1927-28. Fees earned Rs. 3,73,047 (*a*)

	Rs. (*a*)
Textiles and leather	1,18,82,009
Engineering and miscellaneous	2,54,22,663
Total	3,73,04,672

1928-29. Fees earned Rs. 3,60,480

	Rs.
Textiles and leather	1,16,24,973
Engineering and miscellaneous	2,44,23,101
Total	3,60,48,074

APPENDIX VII.

List of "Running" and "Rate" contracts.

(*Vide* paragraph 27 of the Report.)

A.—Contracts entered into by the Headquarters office during the year 1928-29.

(COTTON.)

1. Bags, dosuti, postal.
2. Bags, kit, waterproof.
3. Cotton waste, coloured.
4. Cotton waste, white.
5. Drill, blue, grey and khaki.
6. Dangri cloth, white unbleached.
7. Holland cloth.
8. Lining cloth.
9. Mosquito netting.
10. Pugree cloth, khaki.
11. Pugree cloth, white.
12. Turbans, cotton, khaki.
13. Umbrellas.
14. Waterproof cloth.

(WOOLLEN.)

15. Blankets.
16. Broad cloth, superfine.
17. Cloth, woollen, blue.
18. Coats, grey, serge.
19. Overcoats of blanketting cloth, with and without capes.
20. Trousers, grey, serge.
21. Twill cloth of colours.

(JUTE, HEMP AND MISCELLANEOUS.)

22. Bags, mail, postal.
23. Buttons, black, oxidised.
24. Buttons, gold.
25. Lace, gold.
26. Neckgear, gold.
27. Paulins, flax.
28. Tassels, gold.
29. Uniforms; making up of, including supply of all garments.

(ENGINEERING AND MISCELLANEOUS.)

30. Alumina ferric.
31. Angle pieces, mild steel, for wooden kit boxes.
32. Asbestos cement sheets, and accessories.
33. Bearings, ball, journal.
34. Black japan.
35. Boxes, kit, steel sheet, for sea service.

APPENDIX VII—*contd.*

List of "Running" and "Rate" contracts—contd.

A.—Contracts entered into by the Headquarters office during the year 1928-29 —contd.

(ENGINEERING AND MISCELLANEOUS)—*contd.*

36. Boxes tin, for postage stamps.
37. Brushes for cleaning stamps.
38. Brushes for sweeping.
39. Buttons, brass.
40. Cables, vulcanized India rubber, single core, 600 megohm grade.
41. Candles, carriage.
42. Ceiling roses, porcelain.
43. Cement.
44. Cleats, porcelain.
45. Coal tar for painting purposes.
46. Cooking ranges.
47. Cord, flexible, twin twisted, cotton finish.
48. Cord, flexible, twin twisted, silk finish.
49. Cut outs, porcelain.
50. Disinfecting fluids.
51. Distribution Boards.
52. Enamels, ten kinds.
53. Fuse boards.
54. Fuses, oblong.
55. Gold leaf.
56. Graphite.
57. Greases.
58. Labels, brass, for key rings.
59. Lamp brackets.
60. Lamp holders.
61. Lamps, electric, automobile.
62. Lamps, electric, carbon filament.
63. Lamp, electric metal filamant, gasfilled type.
64. Lamps, electric, metal filament, vacuum type.
65. Lamps, electric, train lighting, gasfilled type.
66. Lamps, electric, train lighting, vacuum type.
67. Leather reviver.
68. Liquid chlorine.
69. Liquid driers.
70. Locks.
71. Metals, bearing.
72. Meters, house service, three phase, watt hour.
73. Meters, house service, single phase, watt hour.
74. Meters, house service, direct current, ampere hour.
75. Meters, water, Glenfield, rotary.
76. Meters, water, Siemens.

APPENDIX VII—*contd.*

List of "Running" and "Rate" contracts—contd.

A.—Contracts entered into by the Headquarters office during the year 1928-29 —contd.

(ENGINEERING AND MISCELLANEOUS)—*contd.*

77. Oil, axle, all weather.
78. Oil, batching.
79. Oil, caster.
80. Oil, cleaning, special.
81. Oil, cutting.
82. Oil, fuel.
83. Oil, gas making.
84. Oil, kerosene, Chester Brand.
85. Oil, kerosene, Elephant Brand.
86. Oil, kerosene, Snowflake Brand.
87. Oil, kerosene, Swan and Victoria Brand.
88. Oil, linseed, double boiled.
89. Oil, linseed, raw.
90. Oil, lubricating, air compressor, light and medium.
91. Oil, lubricating, common, dark.
92. Oil, lubricating, crank chamber, all grades.
93. Oil, lubricating, cylinder, common.
94. Oil, lubricating, cylinder, compounded ordinary.
95. Oil, lubricating, cylinder, compounded filtered.
96. Oil, lubricating, cylinder, pure mineral filtered.
97. Oil, lubricating, cylinder, ordinary and superheat.
98. Oil, lubricating, engine, all grades.
99. Oil, lubricating, internal combustion engines, all grades.
100. Oil, lubricating, machinery, all grades.
101. Oil, lubricating, main motor armature and suspension bearings.
102. Oil, lubricating, light.
103. Oil, lubricating, non-freezing, light.
104. Oil, lubricating, spindle, extra light.
105. Oil, lubricating, spindle, for electric dynamos and motors.
106. Oil, mineral, colza.
107. Oil, transformer.
108. Paint remover.
109. Paints, stiff and ready mixed, and dry pigments of fifty-two kinds.
110. Paste driers.
111. Petrol.
112. Pipes, cast iron, and specials.
113. Pipes, galvanized iron and fittings.
114. Plugs, wall, and sockets.
115. Polish, French.
116. Powder, filling up.
117. Pumice stone.
118. Safes.

APPENDIX VII—*contd.*

List of "Running" and" "Rate" contracts—contd.

A.—Contracts entered into by the Headquarters office during the year 1928-29 —concld.

(ENGINEERING AND MISCELLANEOUS)—*concld.*

119. Seals, lead, for closing mail bags.
120. Shades, conic, opal.
121. Shades, enamelled, iron.
122. Shellac.
123. Sign boards, enamelled.
124. Sleepers, deodar and sal.
125. Soap, hard.
126. Soap, soft.
127. Solignum.
128. Solution, bitumastic.
129. Solution bituminous.
130. Spare parts for Canadian Ford Models "A" and "AA", "T" and "TT".
131. Spear heads with brass bells.
132. Spirits, denatured, methylated.
133. Steel sections.
134. Switches (flat, tumbler and train lighting and switches with fuses, iron clad).
135. Tallow.
136. Target apparatus.
137. Timber for packing cases.
138. Tin trays.
139. Turpentine, genuine.
140. Turpentine, substitute.
141. Tyres and tubes for bicycles.
142. Varnishes.
143. Vaseline, pure.

B.—Contracts in force during 1928-29, which were entered into in previous years.

(ENGINEERING AND HARDWARE.)

1. Arms racks, Biggs pattern.
2. Creosote.
3. Fans, electric, ceiling, alternating current.
4. Fans, electric, ceiling, direct current.
5. Fans, electric, table, alternating current.
6. Fans, electric, table, direct current.
7. Tyres, and tubes.

(COTTON.)

8. Durries.
9. Buckets, canvas for ponies.
10. Ground sheets.
11. Bags, ration, waterproof.

APPENDIX VII—*contd.*

B.—Contracts in force during 1928-29, which were entered into in previous years—concld.

(ENGINEERING AND HARDWARE)—*concld.*

12. Capes, waterproofed, Burman and Indian.
13. Hoods for capes, Burman and Indian.
14. Ropes, head and heel.
15. Bags, nose, canvas.
16. Haversacks.
17. Uniforms (Summer) for Railway servants.

(WOOLLEN.)

18. Caps, Balaclava.
19. Jackets, cardigan.
20. Putties, Blue and khaki.
21. Drawers.
22. Socks.
23. Great coat cloth.

C.—Contracts entered into by the Controller of Purchase, Calcutta Circle.

(TEXTILE STORES.)

1. Bags, gunny.
2. Bags, jute hand.
3. Belts, shoulder.
4. Belts, waist.
5. Braid red worsted.
6. Buttons, aluminium.
7. Buttons, horn.
8. Buttons, iron.
9. Canvas, cloth.
10. Canvas, jute.
11. Caps.
12. Covers for Sola hats.
13. Drill, white.
14. Fish line.
15. Hats, Gurkha.
16. Helmets, cork.
17. Hessian Cloth.
18. Hooks and eyes.
19. Log line.
20. Paulins, flax, canvas.
21. Tape, cotton.
22. Thread, cotton, black.
23. Thread, cotton, yellow.
24. Twine, buttoning, English.
25. Twine, jute.
26. Uniforms for crew staff.

APPENDIX VII—*contd.*

C.—*Contracts entered into by the Controller of Purchase, Calcutta Circle*—contd.

(ENGINEERING AND MISCELLANEOUS STORES).

27. Acid, Hydrochloric.
28. Asbestos packing, greasy.
29. Asbestos packing, rope.
30. Belting.
31. Bolts and nuts, M. S.
32. Bolts, tower, iron.
33. Bottles, water.
34. Brooms, cocoanut.
35. Brushes, boot polishing.
36. Brushes, flat.
37. Brushes, oval.
38. Brushes, paint, for painting letter boxes.
39. Brushes, sashtool.
40. Chain, short link, iron.
41. Chlorine gas.
42. Crockery.
43. Cutlery and glassware.
44. Emery cloth.
45. Emery paper.
46. Fibre rod.
47. Fibre sheet.
48. Fittings, water, brass and gunmetal.
49. Gauze, wire, G. I.
50. Glass panes, 16 oz.
51. Glass panes, 21 oz.
52. Glass paper.
53. Handles, hammer, hickory.
54. Hinges, butt, brass.
55. Hinges, butt, steel.
56. Holders, tin, seal.
57. Lamps, table, Punkhaproof.
58. Lamps, wall.
59. Lanterns, brass, Dietz.
60. Mild steel sections.
61. Miscellaneous equipment for P. W. D. Rest houses and Inspection Bungalows.
62. Nails, wire, iron.
63. Oil, castor.
64. Oil, cocoanut.
65. Oil, mineral.
66. Pheneol.
67. Rivets, snap head.
68. Screws, iron.
69. Shades, opal, white.
70. Shellac.

APPENDIX VII--*concld.*

C.—Contracts entered into by the Controller of Purchase, Calcutta Circle—concld.

71. Solder, Tinman's.
72. Utensils, kitchen.
73. Wire, D. C. C.
74. Wire, D. S. C.

D.—Contracts entered into by the Controller of Purchase, Karachi Agency.

(Engineering and Miscellaneous Stores.)

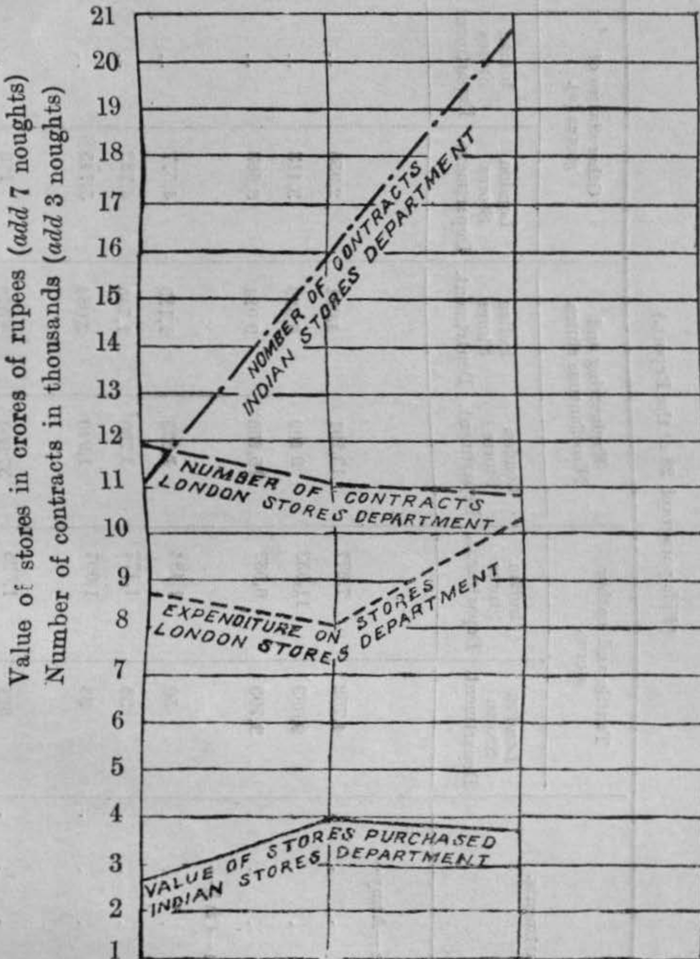
1. Bib cocks, brass.
2. Blades, hacksaw.
3. Brasso.
4. Brush, paint, flat.
5. Crucible, Foundry, Morgans.
6. Emery cloth.
7. Glass panes, plain.
8. Grease cups.
9. Handles, hickory, for shovels, Phaorahs and pick-axes.
10. Hinges, Butt, Cast, brass.
11. Hinges, Butt, Wrought iron.
12. Nails, wire, iron.
13. Phenyle.
14. Sand paper.
15. Screws, wood, brass.
16. Screws, wood, iron.
17. Thimbles, U. Bolts, clamps, etc., G. I.
18. Tubes, copper.
19. Washers, cocoanut fibre.
20. Wire, barbed, G. I.

APPENDIX VIII.

VALUE OF STORES PURCHASED AND NUMBER OF CONTRACTS PLACED BY THE LONDON AND INDIAN STORES DEPARTMENTS.

(*Vide* paragraph 28 of the Report.)

The London Stores Department figures represent expenditure on stores and freight converted into Indian currency at a uniform rate of 1*s.* 6*d.* to the rupee. The Indian Stores Department figures represent the value of contracts placed.



No. of contracts.	1925-26.	1926-27.	1927-28.	1928-29.
London Stores Deptt.	11,956	11,126	10,862	..
Indian Stores Deptt.	11,165	16,027	20,753	21,922
Value in thousands of Rupees.				
London Stores Deptt.	87,111	80,143	1,02,930	..
Indian Stores Deptt.	26,668	39,880	37,304	36,068

APPENDIX IX.

Comparative Statement of Purchases made by the London and Indian Stores Departments.

THE FIGURES ARE IN THOUSANDS OF RUPEES.

(*Vide* paragraph 28 of the Report.)

Indenting Departments.	Textile and leather stores.		Engineering and Miscellaneous stores.		Other classes of stores (*a*).		Total.	
	London Stores Department.	Indian Stores Department.	London Stores Department.	Indian Stores Department.	London Stores Department.	Indian Stores Department.	London Stores Department.	Indian Stores Department.
1. Central Departments—Army—								
1925-26	4,752	7,677	13,291	4,091	2,955	..	20,998	11,768
1926-27	9,089	11,633	9,409	5,829	3,413	..	21,911	17,462
1927-28	3,793	6,587	15,255	9,024	8,663	..	27,711	15,611
2. Central Departments—Civil—								
1925-26	50	1,484	4,635	1,133	4,577	..	9,262	2,617
1926-27	38	1,177	3,790	1,745	4,782	..	8,610	2,922
1927-28	38	1,097	1,940	2,084	5,745	..	7,723	3,181
3. Railways—								
1925-26	624	1,535	37,904	2,672	176	..	38,704	4,207

1926-27	511	2,663	90,729	4,879	257	..	91,497	7,542
1927-28	359	2,855	31,389	4,755	146	..	31,894	7,610
4. **Provincial Governments—**								
1925-26	65	1,144	7,552	6,069	952	..	8,569	7,213
1926-27	70	795	5,823	10,338	1,514	..	7,407	11,133
1927-28	78	1,331	8,290	9,359	1,462	..	9,830	10,690
5. **Indian States and Public bodies—**								
1925-26	..	35	..	815	..	..	..	850
1926-27	..	18	..	805	..	..	..	823
1927-28	..	12	..	200	..	..	..	212
6. **Total of items below Rs. 500—**								
1925-26	..	7	..	6	..	..	..	13
1926-27	..	..	..	..	..	..	..	..
1927-28	..	..	..	..	..	..	..	..
7. **Total—**								
1925-26	5,491	11,882	63,382	14,786	8,660	..	77,533	26,668
1926-27	9,708	16,286	109,751	23,596	9,966	..	129,425	39,882
1927-28	4,268	11,882	56,874	25,422	16,016	..	77,158	37,304

N.B.—The figures of the India Stores Department, London, have been converted at the rate of 1*s*. 6*d*. —Re. 1.

(*a*) Stores not dealt with by the Indian Stores Department, *e.g.*, medical stores, munitions, stationery and printing, stamps, currency, foodstuffs, etc.

APPENDIX X.

List of specifications framed by the Indian Stores Department current at the end of year 1928-29.

(*Vide* paragraph 30 of the Report.)

INDEX.

Section No.	Name of stores. Main head.	Sub-head.	Classification reference.
1	Bridgework . . .	....	A
2	Engineers' plant (excluding petty tools).	....	B
3	Workshop machinery and heavy tools.	....	C
4	Ballast and permanent-way materials.	....	D
5	Rolling stock . . .	....	E
6	Station materials and fencing	....	F
7	Tools and stores —	(*a*) Tools	G/Tools.
		(*b*) Stores—	
		(i) Hardware; copper, tin and zinc ware.	G/Ware.
		(ii) Lamps and lamp fittings .	G/Lamps.
		(iii) Leather and India rubber goods.	G/Leather.
		(iv) Metals	G/Metals.
		(v) Painters' stores (oils and paints).	G/O. P.
		(vi) Timber . . .	G/Timber.
		(vii) Fuel	G/Fuel.
		(viii) Furniture . . .	G/Furniture.
		(ix) Cloth, clothing and equipment.	G/Textiles.
		(x) Miscellaneous . .	G/Misc.
		(xi) Stationery . . .	G/Stationery.
		(xii) Drawing, mathematical and surveying instruments.	G/Instruments.

APPENDIX X—*contd.*

List of specifications framed by the Indian Stores Department current at the end of year 1928-29—concld.

Section No.	Name of stores. Main head.	Name of stores. Sub-head.	Classification reference.
		(xiii) Printing presses and materials.	G/Prints.
		(xiv) Sanitary stores . .	G/Sanitary.
		(xv) Waterworks stores .	G/W. W.
		(xvi) Building materials .	G/Buildings.
		(xvii) Chemicals . . .	G/Chemicals.
8	Electrical plant and materials	....	H
9	Power and industrial plant .	....	P. I.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29.*

Specification No.	Description.	Current edition.
	SECTION 1.—*Bridgework.*—A.	
A-33	Steelwork	A-33H.
A-34	*Steel sheet piling with clutch (joist pattern) (a)*	*A-34A.*
A-35	*Structural steel, plates, sections, e.g., angles, tees, joists, channels, etc., and bars (a).*	*A-35J.*
A-40	Bridgework	A-40D.
A-48	Tank and staging	A-48A.
	SECTION 2.—*Engineers' plant (excluding petty tools).*—B.	
B-45	Vertical boiler	B-45.
B-50	Loco. multitubular boiler	B-50B.
B-51	5-ton portable hand operated crane for 5′—6″ gauge railway track.	B-51.
B-52	Scotch hand derrick crane, constructed of steel	B-52.
B-53	Hand operated overhead travelling and traversing crane.	B-53A.
	SECTION 3.—*Workshop machinery and heavy tools.*—C.	
C-29	Machine tools, first class	C-29
C-31	Machine tools	C-31.
	SECTION 4.—*Ballast and permanent-way materials.*—D.	
D-1	*Steelwork for light railway track for construction work (a).*	*D-1C.*
D-2	Tip trucks for 1′—6′, 2′—0″ and 2′—6″ gauge railway, contractor's type.	D-2C.
D-6	Built-up points and crossings complete with wing rails, lever boxes and all other fittings.	D-6.
	SECTION 5.—*Rolling stock.*—E.	
E-28	Weighbridge	E-28.
E-29	Engine turntable	E-29A.
E-32	Steam locomotive crane	E-32.
E-33	Steel fish bolts and nuts	E-33C.
E-34	*Steel dog spikes (a)*	*E-34B.*
E-35	Steel, round spikes for rail chairs . . .	E-35B.
E-36	Steel, screw spikes for railways	E-36.
E-37	Laminated springs	E-37B.
E-38	Cast steel wheels with axles for 2′—6″ gauge	E-38.
E-42	Mild steel rivets	E-42D.

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
E-47	Mild steel bolts, nuts and washers, black and galvanized.	E-47B.
E-48	Cast steel wheels and axles for light tip trucks and unimportant works.	E-48.
E-49	Cast iron superheater headers for locos: for Railways.	E-49.
E-50	Steel tyres for locomotives, tenders, carriages and wagons.	E-50.
E-53	Axle boxes, cast steel, for railway stock .	E-53.
	SECTION 7.—*Tools and stores.*	
	(*a*) *Tools.*—G/Tools.	
G/Tools-1 . . .	Tools for earthwork, etc. (picks and beaters, kodalies, powrahs, mamooties or hoes, sledge and other hammers, jumper and drill steel).	G/Tools-1.
„ 2 . . .	Anvils	„ 2.
	(*b*) *Stores.*	
	(i) *Hardware, copper, tin and zinc-ware.*—G/Ware.	
G/Ware-30 . . .	Wire, ordinary steel, black and galvanised	G/Ware-30A.
„ 31 . . .	Hoops, iron and steel	„ 31A.
„ 32 . . .	Wire barbed	„ 32.
„ *33* . . .	*Wire, ordinary, steel, round either black or galvanized, for making mattress cases for boulder filling for flood protection or similar work.*	„ *33.*
	(ii) *Lamps and lamp fittings.*—G/Lamps.	
G/Lamps-1 . . .	Dark lanterns, dafadars	G/Lamps-1.
	(iii) *Leather and India rubber goods.*—G/L.	
G/L-38 . . .	Vacuum brake rubber fittings for use on railway.	G/L-38.
„ *39* . . .	*Solid tyres for cycles* (*a*)	„ *39A.*
„ 40 . . .	Solid tyres and tyre bands for tractors, lorries, etc.	„ 40C.
„ 41 . . .	Pneumatic tyres, outer covers and inner tubes for cycles, cars and motor cycles, etc.	„ 41D.
„ *42* . . .	*Pneumatic tyres, outer covers and inner tubes for cycles* (*a*).	„ *42A.*
„ 43 . . .	Leather buffalo and cow and sheep skin .	„ 43.
„ *44* . . .	*Waist belt, leather, for the Public Works Department, Punjab.*	„ *44.*
„ *45* . . .	*Meshas*	„ *45.*
„ *46* . . .	*Leather belting*	„ *46.*

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
	(iv) *Metals.*—G/Metals.	
G/Metals-9 . . .	Manganese steel castings	G/Metals-9.
„ 16 . .	Mild steel rods for ferro-concrete work .	„ 16C.
„ *17* . .	*Case hardening and welding quality steel bars and billets.*	„ *17.*
„ *21* . .	*Short link chains (iron welded) for all services except marine (a).*	„ *21B.*
„ 40 . .	Tinned plates	„ 40A.
„ 41 . .	Sheets, galvanised steel, flat or corrugated .	„ 41C.
„ 42 . .	Sheets, plain galvanised iron	„ 42.
„ 45 . .	Sheets, milled lead	„ 45A.
„ 46 . .	Pig lead	„ 46.
„ 51 . .	Small ropes or cords of steel wire . . .	„ 51.
„ 52 . .	Copper alloy for carriage and wagon axle-box brasses.	„ 52.
„ 53 . .	Solder, soft	„ 53A.
„ 54 . .	Tin sticks for tinning cooking pots and for similar purposes.	„ 54A.
„ 55 . .	Tin in ingots	„ 55.
„ 56 . .	Copper in ingots	„ 56.
„ *57* . .	*Antifriction metal for Locomotive carriage and wagon purposes (a).*	„ *57A.*
„ *58* . .	*Copper sheets, annealed for spinning or cold working (a).*	„ *58A.*
„ 59 . .	Brass sheets, annealed for spinning or cold working.	„ 59.
„ 60 . .	Zinc sheets	„ 60.
, 61 . .	Bearing metal for axles of railway rolling stocks.	„ 61.
„ 62 . .	Solder brazing	„ 62.
.. 63 . .	Solder silver	„ 63.
„ 67 . .	Balls and rollers, steel, and ball and roller bearings.	„ 67.
„ *68* . .	*Brass bars for screwing and machining* . .	„ *68.*
„ *69* . .	*High tensile brass bars and sections, grade 'B,' 35 tons per sq. in. quality.*	„ *69.*
„ *70*	*High tensile brass bars and sections, grade 'A,' 30 tons per sq. in. quality.*	„ *70*
„ *71*	*Antimony ingots*	„ *71.*
	(v) *Painters' stores.*—G/O. P.	
G/O.P-1 . . .	Castor seed	G/O. P-1.
„ 3 . . .	Shellac	„ 3.

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/O.P-4	Spirits, denatured, methylated	G/O.P-4.
" 13	Oil, aircraft, medium	" 13.
" 14	Oil, aircraft, heavy	" 14.
" 20	Oil, lubricating, axle for use during hot weather.	" 20A.
" 21	Oil, lubricating, axle for use during cold weather.	" 21A.
" 33	Creosote	" 33A.
" 38	Petrol, aviation	" 38.
" 60	Soap, hard	" 60A.
" 61	Soap, soft	" 61A.
" *64*	(*Road tar*). *Tar coal for Road making*	" *64.*
" *65*	*Crude tar*	" *65.*
" *66*	*Pitch coal tar, medium*	" *66.*
" 67	Wood tar	" 67A.
" 95-106	Paints and painter's materials	" 95-106.
" 107	Paints and painter's materials	" 107A.
" 108-125	Paints and painter's materials	" 108-125
" 126	Paints and painter's materials	" 126B.
" 127-136	Paints and painter's materials	" 127-136.
" 137	Paints and painter's materials	" 137A.
" 138-146	Paints and painter's materials	" 138-146.
" 147	Paints and painter's materials	" 147A.
" 148-151	Paints and painter's materials	" 148-151.
" 201	Oil, spindle, extra light	" 201.
" 202	Oil, spindle, light	" 202.
" 203	Oil, spindle	" 203.
" 204	Oil, machinery, light	" 204.
" 205	Oil, machinery, medium	" 205.
" 206	Oil, engine, light	" 206.
" 207	Oil, engine, medium	" 207.
" 208	Oil, engine, heavy	" 208.
" 211	Oil, internal combustion engine, light	" 211.
" 212	Oil, internal combustion engine, medium	" 212.
" 213	Oil, internal combustion engine, heavy	" 213.
" 214	Oil, internal combustion engine, extra heavy	" 214.
" 221	Oil, crank chamber	" 221.
" 222	Oil, crank chamber, heavy	" 222.
" 231	Oil, compressor, light	" 231
" 232	Oil, compressor, medium	" 232.
" 233	Oil, compressor, heavy	" 233.
" 241	Oil, cylinder, common	" 241.
" 242	Oil, cylinder, pure mineral, ordinary	" 242.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/O.P-243	Oil, cylinder, pure mineral, superheat	G/O.P-243.
„ 244	Oil, cylinder, compounded, ordinary	„ 244.
„ 245	Oil, cylinder, compounded, superheat	„ 245.
„ 246	Oil, cylinder, compounded, filtered	„ 246.
„ 247	Oil, cylinder, pure mineral, filtered	„ 247.
„ 251	Oil, non-freezing, extra light	„ 251.
„ 252	Oil, non-freezing, light	„ 252.
„ 253	Oil, common, dark	„ 253.
„ 254	Oil, axle	„ 254.
„ 261	Petrol	„ 261.
„ 262	Oil, kerosene, 1st quality	„ 262.
„ 263	Oil, kerosene, 2nd quality	„ 263.
„ 264	Oil, kerosene, 3rd quality	„ 264.
„ 265	Oil, fuel, 1st quality	„ 265.
„ 266	Oil, fuel, 2nd quality	„ 266.
„ 267	Oil, mineral, colza	„ 267.
„ 271	Oil, transformer	„ 271.
„ 272	Oil, switch	„ 272.
„ 273	Oil, sealing	„ 273.
„ 281	Oil, castor	„ 281.
„ 282	Oil, cocoanut	„ 282.
„ 283	Oil, mustard (rape)	„ 283.
„ 284	Tallow	„ 284.
„ 291	Grease, cup	„ 291.
„ 292	Grease, graphite	„ 292.
„ 293	Mineral jelly	„ 293.
	(vi) *Timber.*—G/Timber.	
G/Timber-30	Deodar sleepers	G/Timber-30A.
„ 34	Teak squares	„ 34A.
„ 35	Teak scantlings	„ 35.
	(ix) *Cloth, clothing and equipment.*—G/Textiles.	
G/Tex/C-1	Twine, cotton 5/10*s*.	G/Tex/C-1.
„ 4	Canvas, cotton, brown	„ 4.
„ 5	Gauze, absorbent cotton, white, bleached	„ 5A
„ 6	Bag, boy messenger's	„ 6.
„ 7	Sheets, ground	„ 7.
„ 8	Paulins, cotton	„ 8.
„ 9	Durries, blue striped	„ 9.
„ 10	Bags, kit	„ 10.
„ 11	Bags, ration, waterproof	„ 11.
„ 12	Haversack	„ 12A.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/Tex/C-13 . . .	Capes, waterproof, Indian, with hood .	G/Tex/C-13.
„ 14 . . .	Capes, waterproof, Burman . . .	„ 14.
„ 15 . . .	Newar, grey	„ 15.
„ 16 . . .	Putties, cotton of different shades . .	„ 16B.
„ 17 . . .	Capes, with hoods waterproof for the Postal Department.	„ 17B.
„ 18 . . .	Cotton wool for bandages for Medical Department.	„ 18.
„ 19 . . .	Long cloth, bleached, for the Medical Department.	„ 19.
„ 21 . . .	Bags, dosooti, postal, for Indian Postal Department.	„ 21B.
„ 23 . . .	Drill, cotton, grey	„ 23A.
„ 24 . . .	Cotton, yarn, grey	„ 24A.
„ 28 . . .	Dusters (third class)	„ 28A.
„ 30 . . .	Sheeting, unbleached	„ 30A.
„ 31 . . .	Haversack, khaki cotton drill with side gussets	„ 31A.
„ 33 . . .	*Thread, cotton, sewing of various sizes and colours* (*b*).	„ *33B.*
„ 34 . . .	Muslin, bleached	„ 34.
„ 35 . . .	Long cloth, unbleached for bandages .	„ 35B.
„ 36 . . .	Bandage cloth, bleached	„ 36B.
„ 37 . .	Alpaca cloth, black	„ 37.
„ 39 . . .	Paramatta cloth, black	„ 39A.
„ *40* . . .	*Twill khaki* (*a*)	„ *40A.*
„ *41* . . .	*Dhoti cloth, grey* (*a*)	„ *41A.*
„ 42 . . .	Jean cotton, bleached	„ 42.
„ *43* . . .	*Lining cloth* (*b*)	„ *43C.*
„ 44 . . .	Pugri cloth, cotton, khaki	„ 44A.
„ 45 . . .	Canvas, cotton, khaki, proofed for hoods .	„ 45.
„ *46* . . .	*Durries, ordinary quality*	„ *46.*
„ *47* . . .	*Mosquito netting 72″ wide*	„ *47.*
„ 49 . . .	Waste, cotton, white No. 1A	„ 49B.
„ 50 . . .	Waste, cotton, white No. 1B	„ 50.
„ 51 . . .	Waste, cotton, coloured No. 2	„ 51.
„ 52 . . .	Waste, cotton, white or coloured for cleaning ordinary machinery.	„ 52.
„ *53* . . .	*Drill blue, heavy, medium and light qualities* (*a*)	„ *53B.*
„ *54* . . .	*Drill bleached, heavy, medium and light qualities* (*a*).	„ *54B.*
„ *55* . . .	*Drill khaki, heavy, medium and light qualities* (*a*).	„ *55B.*

(*a*) Revised once.

(*b*) Revised twice.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/Tex/C-56	*Pugri cloth, cotton, red (a)*	*G/Tex/C-56A.*
„ *57*	*Pugri cloth, cotton, blue (a)*	„ *57B.*
„ 58	Pugri cloth, cotton, bleached	„ 58A.
„ *59*	*Tent, eighty pounds light field service, 8′×10′, without bath room.*	„ *59.*
„ *60*	*Tent, Elliott pattern miniature Swiss cottage, 10′×10′ and 12′×12′.*	„ *60.*
„ *61*	*Tent, Swiss cottage, Gazetted Police officers' pattern.*	„ *61.*
„ *62*	*Pugree cloth, cotton green*	„ *62.*
„ *63*	*Webbing cotton, khaki*	„ *63.*
„ *64*	*Kullahs*	„ *64.*
„ *65*	*Dosuti, bleached*	„ *65.*
„ *67*	*Long cloth, bleached*	„ *67.*
„ *68*	**Cloth, table, bleached (a)*	„ *68A.*
„ *69*	*Sheeting, unbleached*	„ *69.*
„ *70*	*Sheets, bed, unbleached*	„ *70.*
„ *71*	*Lungis with headings of gold thread*	„ *71.*
„ *73*	*Lungis, ordinary*	„ *73.*
„ *75*	*Napkins, table, bleached*	„ *75.*
„ *80*	*Muslin, grey*	„ *80.*
„ *83*	*Drill, cotton, grey*	„ *83.*
„ *85*	*Towels, hand*	„ *85.*
G/Tex/F-1	Bag, Superintendent's camp, flax canvas, single.	G/Tex/F-1.
„ 2	Bag, Superintendent's camp, flax canvas, double.	„ 2.
„ 4	Bags, nose	„ 4.
„ 5	Buckets, canvas, for ponies	„ 5.
„ 6	Bags, planter's with locking arrangements (unproofed) and planter's bag (proofed) and with locking arrangements.	„ 6A.
„ 7	*Canvas flax*	„ *7.*
„ 45	Dowlas 54″	„ 45.
„ 46	Paulins	„ 46C
G/Tex/H-1	Ropes, head and heel, manilla	G/Tex/H-1.
„ 3	Twine, hemp, English and Country	„ 3.
„ 4	Ropes and cordages, manilla, hawser laid (first quality).	„ 4B.
„ 5	Ropes and cordages, manilla, hawser laid (second quaity). ,	„ 5.
„ *6*	*Cash bags, tat putte*	„ *6.*

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/Tex/J-1 . . .	Twine jute 1-ply, 2-ply, 3-ply, 4-ply, 5-ply and 6-ply.	G/Tex/J-1A.
„ 12 . . .	Bags jute, unproofed, for linemen's tools .	„ 12A.
„ 22 . . .	Bags, flax or jute, mail, proofed and unproofed	„ 22B.
„ 23 . . .	Paulins, jute	„ 23B.
G/Tex/Misc.-5 . .	**Tents, Swiss cottage, square ended. (a)* .	*G/Tex/Misc.-5A.*
„ *7* . .	*Lace, gold*	„ *7.*
„ *8* . .	*Tent, office*	„ *8.*
„ *9* . .	*Tent, hill*	„ *9.*
„ *10* . .	*Servant's pal*	„ *10.*
„ *11* . .	*Tent, Light Field Service, 80 lbs.* . . .	„ *11.*
G/Tex/W-1 . . .	Wool, black and mixed, for blankets . .	G/Tex/W-1.
„ 3 . . .	Drawers, woollen	„ 3.
„ 4 . . .	Caps, balaclava	„ 4.
„ *5* . . .	*Jackets, cardigan, woollen (a)*	„ *5A.*
„ *6* . . .	*Putties, woollen, khaki and blue (a)* . . .	„ *6A.*
„ 7 . . .	Bunting cloth, red and green	„ 7.
„ *8* . . .	*Serges, blue, medium quality and broad cloths (a).*	„ *8A.*
„ *9* . . .	*Serges of superior quality (b)*	„ *9B.*
„ *11* . .	*Flannel, silver grey*	„ *11.*
„ *12* . .	*Mittens*	„ *12.*
„ *13* . .	*Packing, woollen, yarn, for main motor and suspension bearings.*	„ *13.*
„ 15 . .	Serge, white for Medical and Veterinary requirements.	„ 15.
„ 16 . .	Flannel, white	„ 16B.
„ 18 . .	Serge blue for shore and sea service . .	„ 18
„ *19* . .	*Serge khaki*	„ *19.*
„ *20* . .	*Socks, woollen, blue grey*	„ *20.*
„ *21* . .	**Woollen, yarns (a)*	„ *21A*
„ *22* . .	*Serges of medium quality*	„ *22.*
„ *23* . .	*Broad cloth, woollen*	„ *23.*
„ *24* . .	*Flannel, green, superior quality* . . .	„ *24.*
„ 32 . .	Cloths, blanketting grey and black for the use of Railway Staff.	„ 32A.
„ *36* . .	*Jerseys, woollen*	„ *36.*
	(x) *Miscellaneous.*—G/Misc.	
G/Misc.-1 . . .	Padlocks and locks, box, drawers, etc. . .	G/Misc-1E.
„ 2 . . .	Carbide of calcium	„ 2.

(*a*) Revised once.

(*b*) Revised twice.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
G/Misc.-3 . . .	Boxes, kit, for sea service for the Military Engineering Services.	G/Misc.-3.
,, *15* . . .	*Safes, burglar resisting, non-fire resisting* .	,, *15.*
,, 17 . . .	Brush, sweeping	,, 17.
,, 18 . . .	Brush for painting letter-boxes . . .	,, 18.
,, *19* . . .	*Brush for cleaning stamps* (*a*) . . .	,, *19A.*
. *24* . . .	*Buttons, hollow, white metal* . . .	,, *24.*
,, *25* . .	*Buttons, hollow and badges, brass, guilding metal, nickel silver, German silver, white metal, silver and 'Bronzed.'*	,, *25.*
,, 30 . . .	Fire extinguisher, hand and chemical . .	,, *30A.*
	(xv) *Waterworks stores.*—G/W.W.	
G/W.W.-27 . . .	Pipes, salt glazed earthenware . . .	G/W.W.-27A.
,, 28 . . .	Pipes, wrought iron or mild steel . .	,, 28A.
,, *29* . . .	*Pipes, wrought iron or mild steel for gas* (*a*) .	,, *29C.*
,, 30 . . .	Pipes, wrought iron or mild steel for water .	,, 30A.
,, 43 . . .	Pipes, lead, for water	,, 43B.
	(xvii) *Chemicals.*—G/Chemicals.	
G/Chemicals-9 . .	Nitric acid, commercial	G/Chemicals-9.
,, 11 . .	Hydrochloric acid, commercial	,, 11.
,, 12 . .	Hydrochloric acid, pure	,, 12.
,, 14 . .	Sulphuric acid, concentrated, for accumulators.	,, 14.
,, 15 . .	Sulphuric acid, commercial	,, 15.
,, 16 . .	Alumina ferric	,, 16.
	SECTION 8.—*Electrical plant and materials.*—H.	
H-23	*Wall plugs and sockets, two-pin, hand shield side entry and face entry pattern.*	*H-23.*
H-24	*Wall plugs and sockets, three-pin, hand shield side entry and face entry pattern.* (*Two pin and earth type*).	*H-24.*
H-25	*Plugs and sockets, reversible and non-reversible protected type, two-pin, for circuits up to 250 volts between poles with earthing connection.*	*H-25.*
H-26	*Switches, tumbler, quick make and quick break* (*for use on circuits up to 250 volts*).	*H-26.*
H-34	*Insulators porcelain, pin or shackle type for low and medium tension electric transmission line.*	*H-34.*
H-45	Poles, steel, tubular type, for electric power transmission.	H-45.
H-46	Electrical flexible cords, single conductors, etc.	H-46A.

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.	Current edition.
H-48	Fans, ceiling, alternating current . .	H-48A.
H-50	Bridge megger testing set	H-50.
H-51	Control panel direct current motor iron clad	H-51A.
H-52	Lamp, normal type tungsten filament incandescent.	H-52A.
H-53	Lamp, carbon filament, electric . . .	H-53.
H-54	Lamp, gas filled tungsten filament incandescent electric.	H-54A.
H-55	Fans, ceiling, and regulators (D. C.) .	H-55A.
H-56	Wire, copper, hard drawn, bare . . .	H-56A.
H-57	Cable, electric, single, V. I. R. . . .	H-57.
H-58	Wood casing and capping	H-58A.
H-60	Wire, copper, hard drawn, for telegraph or telephone.	H-60.
H-62	Cables, electric, medium and low pressure paper insulated lead covered and steel armoured, three core and two core.	H-62.
H-64	*Fans, electric, Desk or pedestal, D. C.* . .	*H-64.*
H-65	*Fans, electric, Desk or pedestal, A. C.* . .	*H-65.*
	SECTION 9.—*Power and industrial plant.*—P. I.	
P.I-12 . . .	*Electric machinery* (*a*)	*P.I-12A.*
„ 19	Dragline excavator, oil engine operated	„ 19B
„ 20	Dragline excavator, light weight, steam operated, coal firing.	„ 20A
„ 21	Dragline excavator, steam operated, coal or oil firing.	„ 21.
„ 22	Dragline excavator, crude oil engine operated	„ 22.
„ 26	Jolly boat	„ 26.
„ 35	Dragline excavator, light weight, steam operated, coal or oil firing.	„ 35B.
„ 36	Electric hoists or winches	„ 36.
„ 37	Dredgers (grab type)	„ 37.
„ 38	Petrol paraffin engine	„ 38B.
„ 39	Belting for power drive	„ 39A.
„ 40	Motor boat	„ 40A.
„ 42	Steam pile driving plant	„ 42.
„ *43*	*Engine, crude oil* (*a*)	„ *43E.*
„ 44	Dragline excavator (heavy type) . . .	„ 44.
„ 45	Dragline excavator, medium weight, steam operated, coal or oil firing.	„ 45B.
„ 49	Dragline excavator	„ 49.
„ 60	Centrifugal pumps	„ 60.
„ 61	Stone breaker, etc., oil engine driven . .	„ 61.

(*a*) Revised once.

APPENDIX X—*contd.*

(A) *List of Indian Stores Department General Specifications current at the end of the year 1928-29*—concld.

Specification No.	Description.	Current edition.
P.I.-62 . . .	Mortar grinding mill	P.I.-62.
„ 65 . . .	Dragline, excavator, special, light weight, steam operated, coal or oil firing.	„ 65 B.
„ 74 . . .	Generators and motors, D. C.	„ 74.
„ 75 . . .	Rotary convertor	„ 75.
„ 76 . . .	Transformers, electric power	„ 76.
„ 77 . . .	Alternators	„ 77A.
„ 80 . . .	Plant and machinery	„ 80.
„ 81 . . .	Switchboard, D. C.	„ 81.
„ 82 . . .	Generator, D. C., 3 wire type and static balancers.	„ 82.
„ 95 . . .	Crane, electrically operated, overhead travelling and traversing.	„ 95.
„ *106* . . .	*Road roller, steam operated, coal or wood fired (a).*	„ *106B.*

NOTE.—Specifications framed during the year 1928-29 are shown in italics.

Specifications revised during the year 1928-29 are shown in italics and marked as revised.

Specifications framed and revised during the year 1928-29 are shown in italics and marked with an asterick.

(B) *List of Indian Stores Department special specifications current at the end of the year 1928-29.*

Specification No.	Description.
	SECTION 1.—*Bridgework.*—A.
A-31	Standard mobilization steel hutting.
A-32	Steel and iron work required by the Indian Public Works Department, Delhi, for the roofing of the Assembly, the Council of State and of the Council of Princes' Chambers and Library of the New Legislative Buildings, Imperial Delhi.
A-36	Special construction quarters (portable hutting) for the Lloyd Barrage Project.
	SECTION 2.—*Engineers' plant (excluding petty tools).*—B.
B-48	Portable steam pumping engine equipment with vertical boiler and hose pipe for the Bikaner Canal, Punjab.
B-49	Crane, one 7-ton Scotch hand derrick for the Irrigation Department, Punjab.
	SECTION 5.—*Rolling stock.*—E.
E-30	Metre gauge steam rail motor with goods truck and goods trailer truck for the Sutlej Valley Project, Punjab Public Works Department.

APPENDIX X—*contd.*

(B) *List of Indian Stores Department special specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.
E-31	Steam locomotives, 2′—0″ gauge, for the Sutlej Valley Project, Bikaner Canal, Punjab Public Works Department.
E-40	Steam locomotives, 2′—0″ gauge, for the Sukkur Barrage Project, Sukkur.
	SECTION 7.—(ii) *Lamps and lamp fittings*—G/Lamps.
G/Lamps-11 . .	Railway Mail Service folding candle lantern for the Post and Telegraph Department.
" 16 . .	Brass sealing lamp for the Post and Telegraph Department.
" 23 . .	Table lamp, hanging lamp and hurricane lantern, for the Post and Telegraph Department.
" 24 . .	Incandescent hurricane or hanging lantern petrol pressure type, for the Post and Telegraph Department.
	SECTION 7.—(iv) *Metals.*—G/Metals.
G/Metals-47 . .	Antifriction metal, high grade and low grade for the Military Engineering Services.
	SECTION 7.—(v) *Painters stores*—G/O.P.
G/O.P.-43 . . .	Oils for use of Government Telegraph Department.
" 152 . . .	Oil, lubricating crank chamber, high speed steam engine No. 2, for Bengal Nagpur Railway.
153 . . .	Kerosene oil K-1 in bulk suitable for gas making for Bengal Nagpur Railway.
	SECTION 7.—(ix) *Cloth, clothing and equipment.*—G/Textiles.
G/Tex/C-25 . .	File bundling sheet of blue drill for the Post and Telegraph Department.
" 26 . .	Khaki drill sacks, postman's, for the Post and Telegraph Department.
" 27 . . .	Waterproof khaki drill delivery bag, for the Post and Telegraph Department.
" 29 . . .	Clothing materials for the use of the staff of the Post and Telegraph Department.
" *38* . . .	*Haversack for Burma Military Police.*
" *66* . . .	*Pugree, muslin, blue, for North Western Railway.*
" *67* . . .	*Longcloth for N. W. Railway and other Railways.*
" *72* . . .	*Dosuti, grey, for Borstal Institute, Lahore.*
" *74* . . .	*Turbans, khaki, for the G. I. P. Railway staff.*
G/Tex/W-10 . .	*Oxford grey for N. W. Railway.*
" *14* . .	*Broad cloth, dark blue, for Bombay Police.*
" 17 . .	Great coats with capes for mounted and foot police, Sind.
" 32 . .	Cloth blanketting, grey and black, for the use of North Western Railway staff.
" 37 . .	Clothing materials for the Government of India Menial staff.
" 38	Great coats with capes for Salt and Excise Department, Sind.

APPENDIX X—*contd.*

(B) *List of Indian Stores Department special specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.
G/Tex/W-39 . .	*Serge khaki for G. I. P. Railway.*
G/Tex/Misc.-1 . .	Waist and shoulder belts of red broad cloth for the Post and Telegraph Department.
„ 2 . .	Summer uniforms for the East Indian Railway staff.
„ 3 . .	Winter uniforms for the East Indian Railway staff.
„ *6* . .	*European privates' tent for North Western Railway.*
	SECTION 7.—(x) *Miscellaneous.*—G/Misc.
G/Misc.-4A. . .	*Double security bond boxes and stamp boxes for the Post and Telegraph Department (a).*
„ *7A* . .	*Tin box for insurance seal types and tin box for stamp types for Railway Mail Service (a).*
„ 8 . . .	Lead seals for the Post and Telegraph Department.
„ 9 . . .	Clocks and time pieces for the Post and Telegraph Department.
„ 10 . . .	Tin trays to hold Rs. 1,000 and Rs. 500 for the Post and Telegraph Department.
„ 11 . . .	Badges, brass, for the Post and Telegraph Department.
„ 12 . . .	Letter box for the Post and Telegraph Department.
„ 13 . . .	Punching machine for the Post and Telegraph Department.
„ 14 . . .	Spear head with brass bells for the Post and Telegraph Department.
„ 16 . . .	Tin sheets for the Post and Telegraph Department.
„ 20 . . .	Wooden block for label for the Post and Telegraph Department.
„ 21A . .	Enamelled sheet steel signboards, letter box plates, etc., for the Post and Telegraph Department.
„ 22 . . .	Button, brass, for the Post and Telegraph Department.
„ 23 . . .	Tin seal holder for the Post and Telegraph Department.
„ *26A* . .	*Crump's adjustable proportional modules for the Punjab Irrigation Branch, Public Works Department (a).*
	SECTION 7.—(xv) *Waterworks stores.*—G/W.W.
G/W.W-31 . . .	Wrought iron or mild steel pipes for water for the Bikaner Canal.
	SECTION 8.—*Electrical plant and materials.*—H.
H-59	One switchboard generator panel for Ambala.
H-61	Low and medium pressure paper insulated lead covered and steel tape armoured, 3 core and 2 core electric cables for the Indian Public Works Department, Delhi.
H-63	Motor alternator set and testing transformer with induction regulator controller for the Government Test House, Calcutta.
	SECTION 9.—*Power and industrial plant.*—P.I.
P.I.-27 . . .	Heave-up boat for the Lloyd Barrage Works, Sukkur.
„ 28 . . .	Heave-up boat for the Lloyd Barrage Works, Sukkur.
„ 41 . . .	Pile driver and frame for the Sutlej Valley Project.

(*a*) Revised once.

APPENDIX X—*contd.*

(B) *List of Indian Stores Department special specifications current at the end of the year 1928-29*—contd.

Specification No.	Description.
P.I.-46 . . .	Steam and exhaust piping for the Nalagarh Power House.
" 47 . . .	Two 25 K. W. oil engine driven generating sets and switchboard for the British Infantry Barracks, Lahore.
" 48 . . .	Turbo-alternator set, condensing plant, cranes, boiler, economiser pumps, steel chimney, steam and exhaust pipework, switchboard motor convertor set, rotary convertors, substation plant, extra, high tension feeder cables and auxiliaries for the Public Works Department, Delhi.
" 50 . . .	Concrete mixers and prime movers required for the Bikaner Canal Sutlej Valley Project.
" 51 . . .	Stone breaker plant and screens for the Nalagarh Quarries, Sutle j Valley Irrigation Project.
" 52 . . .	Generating plant, transfomers, switchgear, pump and motors, for the Nalagarh Quarries Power Plant, Punjab Irrigation Department.
" 53 . . .	Generating plant, transformers, switchgear, pump and motors for the Ferozepore Division Power Plant, Punjab Irrigation Department.
" 54 . . .	Concrete mixers with motors for the Su tlej Valley Project.
" 55 . . .	One 53·4 K. V. A. oil engine driven A. C. generating set with exciter for the Northern India Salt Revenue Department, Sambhar Lake.
" 56 . . .	Switchgear for the Northern India Salt Revenue Department, Sambhar Lake.
" 57 . . .	A. C. Motor and controlgear for the Government of India Press, Simla.
" 58 . . .	A. C. motors, controlgear, main switch panel, cable work and wiring, for the experimental spinning plant and technological laboratory of the Indian Central Cotton Committee, Bombay.
" 59 . . .	Two 4 K. W. oil engine-driven generating sets and switchboards for the Military Works Services, Nowshera Sub-District, Northern Command.
" 63 . . .	Passenger, goods and service lifts required by the Indian Public Works Department, for the new Legislative Buildings, Delhi.
" 64 . . .	Passenger, goods and service lifts required by the Indian Public Works Department for Government House, Delhi.
" 66 . . .	Oil engine alternator set, water cooling plant, crane, switchgear and cables for power station, transformer switchgear and cables for a sub-station for the Lloyd Barrage Works, Sukkur.
" 70 . . .	Oil engine dynamo sets, main fuel tank complete with pipework, water cooling plant, crane, switchgear and cables for power station and motors, controlgears and cables for the press machinery for the Government Postal Press, Aligarh.
" 78 . . .	Additional oil engine alternator sets, water cooling plants, transformers, switchgear and cables for the power station of the Lloyd Barrage Works, Sukkur.
" 79 . . .	Concrete blockyard plant for the Lloyd Barrage Project, Sukkur.
" 83 . . .	325 K. W. oil engine alternator sets, water cooling plant, oil fuel storage tank complete with pipework, crane, transformers, switchgear, and connecting cables, induction motors, E. H. T., feeder cables and accessories for power station and miscellaneous plant. for Salt Mines, Khewra.

APPENDIX X—*concld.*

(B) *List of Indian Stores Department special specifications current at the end of the year 1928-29*—concld.

Specification No.	Description.
P.I.-84	Goods lifts for Postal Press, Aligarh.
" 85	Electrically driven pumping machinery mounted on pontoons for dewatering coffer dams for the Lloyd Barrage Works, Sukkur.
" 86	Oil engine driven power plant for the New Power Station, Municipal Board, Mussooree.
" 87	Plant for hydro-electric scheme, Municipal Board, Mussooree.
" 88	Oil engine driven power station for Jaipore.
" 89	Pile driving plant mounted on pontoons for the Lloyd Barrage Works, Sukkur.
" 90	Scotch derrick crane, motor driven, to lift 25 and 10 tons, on pontoons for the Lloyd Barrage Works, Sukkur.
" 91	Steam driven paddle tugs for the Lloyd Barrage Works, Sukkur.
" 92	Barges for the Lloyd Barrage Works, Sukkur.
" 93	Oil engine driven (diesel) Bucyrus dragline excavators, 30B, for the Lloyd Barrage Works, Sukkur.
" 94	Oil engine driven (diesel) Bucyrus dragline excavators, 50B, for the Lloyd Barrage Works, Sukkur.
" 96	Electrical plant for the Public Works Department, Punjab.
" 97	30-B diesel engine driven Bucyrus dragline excavator for the Lloyd Barrage Works, Sukkur.
" 99	Steel barges of capacity up to 100 tons of stone for the Lloyd Barrage Works, Sukkur.
" 100	50-B diesel engine driven Bucyrus dragline excavator for the Lloyd Barrage Works, Sukkur.
" 101	Sluice gates for the Panjnad Barrage on the river Sutlej, thirty-three gates, clear width of opening 60′—0″, 18′—6″ deep, for Punjab Public Works Department.
" 102	Gates for the undersluices of the weir across the river Damodar, etc.
" 103	250 K. W. 2,300 volts full diesel oil engine alternator sets for the Public Works Department, Simla.
" 104	One 600 K. W. 3,300 volts oil engine alternator set, oil fuel service, tanks, etc., for additional power station, Jaipore Public Works Department.
" 105	Steel barges of capacity up to 100 tons of stone for Lloyd Barrage Works, Sukkur.
" 107	Three 200 K. W. 400 volts water turbine alternator sets, etc., for the Sumera hydro-electric pumping and power scheme for the Public Works Department, United Provinces.
" *108*	*Radial gates for the head and cross regulators for main canal and branches of the Lloyd Barrage and Canals Construction, Sind.*
" *109*	*Sluice gates, vertical sliding and radial types for small branches, distributaries and minors of the Lloyd Barrage and Canals Construction, Sind.*

NOTE.—Specifications framed during the year 1928-29 are shown in italics.
Specifications revised during the year 1928-29 are shown in italics and marked as revised.

APPENDIX X-A.

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29.

(*Vide* para. 31 of the Report).

S. R. No.	Subject.
	(a) Framed prior to 1928-29.
1	Oil engine driven generating set and switchboard for British Infantry Barracks, Lahore.
2	Portable centrifugal pumping equipment with engine petrol paraffin for Punjab.
3	Oil engine driven A. C. generating set, Northern India Salt Revenue Department.
4	Oil engine driven generating set and switchboard for Military Engineering Services, Nowshera.
5	Dragline excavator for Chananwala, Punjab.
6	15 B. H. P. oil engine for Sukkur, Sind.
7	Centrifugal pumping equipment with oil engine for Sukkur, Sind.
8	Scotch hand derrick crane constructed of steel for Sukkur area.
9	Stone crushing plant complete with oil engine equipment for Sukkur area.
10	Weighbridge for Sukkur area.
11	Belting for power drive.
12	Cable, electric, single, V. I. R. insulated (250 volts 600 megohm grade).
13	Steam locomotive crane for Sukkur area.
14	Steam pile driving plant for Sukkur area.
15	Steel sheet piling for Sukkur area.
16	Pile driver and frame for Sutlej Valley Project.
17	Fuel pumping equipment for Peshawar.
18	Electric hoist or winch for Punjab.
19	Water storage tanks complete with steel staging for Sukkur area.
20	Wood casing and capping for electric wiring.
21	Laminated springs for wagons, class C. 3.
22	Machine tools.
23	Direct current ceiling fans.
24	Variable speed D. C. motor and control gear for Forest Research Institute and College, Dehra Dun.
25	10 B. H. P. oil engine complete with generator and switchboard for Kasauli Hill.
26	Wrought iron pipes and fittings for water for Sukkur area.
27	Mixed paints and linseed oils and turpentine.
28	Hand operated overhead travelling and traversing crane for Lahore.
29	Dredger, grab type, for Sutlej Valley Project.
30	Motor boat.
31	Reduced white lead (stiff paint).
32	Steel work for the workshop building for the Lloyd Barrage.
33	D. C. iron clad flexible unit type starting panel for Ambala.
34	Cast iron pipes for Sukkur area.
35	Morta grinding mill coupled with oil engine equipment for Lloyd Barrage Works, Sukkur.
36	Kerosene oil engine for Lahore, Punjab.
37	15-18 H. P. crude oil engine for Punjab.
38	Steel fishbolts and nuts for British Standards 90 lbs. rail

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
39	Motor driven house service centrifugal pumping equipment for Sulemanke.
41	12½ B. H. P. kerosine oil engine horizontal type for Saidgi, Waziristan.
42	Mild steel rods for ferro concrete work for Bakshankhan.
43	Mixed paints linseed oils and turpentines.
44	Steelwork for roofing of New Power House, Delhi.
45	Shunt wound direct current generator and panel for Ferozepore District.
46	Wrought iron pipes and fittings.
47	Steel sheet piling for Sukkur area.
74	Petrol engine driven pump for fire service.
75	Air compressor 500 c. ft. belt drive with crude oil engine for Lloyd Barrage Works, Sukkur.
76	Dragline excavator light weight caterpillar type, steam operated coal or oil firing or crude oil engine drive.
77	Dog spikes.
78	Steam pipes and fittings for Government Model Tannery, Shahdara.
79	D. C. motors, control panels and appliances for Mechanical Transport Workshops, Peshawar.
80	Dragline excavator special C type steam operated coal firing.
81	5-ton hand operated crane for headworks, Western Jumna Canal.
82	Bridge over weir at Sulemanke, Sutlej Valley Project (Chananwala).
83	Pump, motor and control gear for Military Engineering Services, Manzai, Waziristan.
84	8-ton hand operated crane for the Sutlej Valley Project.
85	Oils, lubricating and petrol.
86	Electric fans on single phase 50 cycle 240 volts A. C. for Director General of Posts and Telegraphs.
87	Direct current motor and controlgear.
88	Oil engine centrifugal pumping equipment.
89	Ruston 6 dragline excavator for Hafizabad.
90	D. C. motors with control panels and half couplings and accessories for Mechanical Tranpsort Workshops, Peshawar.
91	Electrically driven centrifugal pumping equipment for the Public Works Department, North-West Frontier Province.
92	Rotary convertor set complete with step down transformer and starting and control equipment.
	Combined 2′-0″ gauge rail and road bridge over Islam Weir, Sutlej Valley Project.
	Alternating current ceiling fans and accessories.
95	Dragline excavator, light weight, caterpillar type, crude oil engine drive, for Sutlej Valley Project.
96	Motor generator set and extra motor for cinema work, Viceregal Estate, Simla and Delhi.
97	Electric motor, starter and switch for the Metallurgical Inspectorate, Jamshedpur.
98	Pumping plant for Dagshai Water Supply.
99	Tube well pumping for Allahabad.
100	Mild steel tank, 1,500 gallons capacity on steel staging 7′-0″ high.
101	Scotch hand derrick cranes constructed of steel, for Lloyd Barrage Works, Sukkur.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
102	Workshops and workshop plant and machinery for Lloyd Barrage Project
103	Motor and oil engine driven air compressor for Lloyd Barrage Project.
104	Light railway material for Lloyd Barrage Project.
107	Electrically driven pumping sets for Topi, Head Works, Rawalpindi.
108	Structural steel for reinforced concrete tank, Risalpur, North-Western Railway.
109	Shafting and accessories for Ginning Factory, Jaipur State.
110	Steel girders for Ball room, Government House, Delhi.
111	Electrically driven centrifugal pumping equipment, Lahore Cantonment.
112	Steel-work for Workshop Building (Janvri Station), Rohri.
113	Crude oil engine, Lloyd Barrage Works, Janvri Station.
114	A. C. motors for Lloyd Barrage Works.
115	Steel wire rope for dragline excavators.
116	Oil engine driven direct current generator sets and switchgear for Military Engineering Services, Jhansi.
117	Cast iron wheels and special D class steel axles for the Chief Ordnance Officer, Rawalpindi.
118	16 B. H. P. crude oil engine for Lahore.
119	D. C. Motor and controlgear for Bannu.
120	Steam and hand operated all round derrick cranes for the Lloyd Barrage Works.
121	Portable centrifugal equipment, Jaipur, Rajputana.
122	Fuel oil and water tanks and staging, and oil engines and pumps for water and oil pumping for the Lloyd Barrage Project.
123	Electrically operated gantry cranes for the Lloyd Barrage Works.
124	Pumping and electric generating plant for camp, Miranshah.
127	Pumping equipment for Military Engineering Services, Saugor.
128	Mild steel tank on steel staging complete with roof, for Miranshah, Bannu.
129	Hand operated crane for Lloyd Barrage Project, Rohri.
130	Steel wire rope, extra flexible, galvanized.
131	Telephone system for Jaipur city.
132	Two-ton hand operated overhead travelling crane.
133	Pumping equipment for Dalowali.
134	Hand operated overhead travelling crane.
135	5 K. W. oil engine driven dynamo set and switchboard, Hindubagh, Baluchistan.
136	Oil engine driven centrifugal pumping equipment.
137	Roof trusses and roofing for engine shed for Sukkur and Janvari, Lloyd Barrage Project.
138	Power Plant for Jubbulpur.
139	Petrol engine driven centrifugal pumping equipment for fire service for Peshawar.
140	Fuel oil storage tank, Lloyd Barrage Works, Sukkur.
141	Electric motor for Postal Press, Aligarh.
142	Tank, galvanized iron, water, and small pumping equipment or the Postal Press, Aligarh.
143	Oil engine driven generator set for Allahabad.
144	Steel tanks and oil engine driven pumping equipment for Lloyd Barrage Works.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
145	Triple ram pump and oil engine.
146	Galvanized steel row boat.
147	Motor lorries for water.
148	Oil tanks and pumps for Sutlej Valley Project.
149	Material trolley for Lloyd Barrage and Canal Construction Works.
150	Bowstring girder bridge to carry water mains, Delhi.
151	Cast iron wheels and mild steel axles.
152	Gantry for Jhansi Power House.
153	600 megohm gra le V. I. R. insulated cables and flexible cord.
154	500-1,000 gallons per hour ram pump.
155	Steel roof for Power House, Lloyd Barrage Works, Sukkur.
156	Small electrically driven ice plant for Sulemanke Headworks.
157	Roofing for Power House, Khewra.
158	Portable concrete mixers and prime movers for Lloyd Barrage Works, Sukkur.
159	Steelwork for Multan Water Works.
160	Bridge over Islam Weir.
161	Motor compound wound reversible and control panel for Lyallpur.
162	Variable speed shunt wound motor and control gear for Government Press, Delhi.
163	Crude oil engine, 5 B. H. P. for Sialkot.
164	Steelwork and roofing for store shed for Lloyd Barrage Works, Sukkur, Sind.
165	Lancashire boiler for Government Opium Factory, Ghazipore.
166	Air compressors, concrete rammers, rivetters and flexible piping.
167	Pumping plant for Khanna Dak, Chaklala.
168	Crushing tester for Lloyd Barrage Works, Sukkur.
169	6,600 volts subaqueous cable and boxes for the Lloyd Barrage, Sukkur.
170	Steelwork for switchboard gallery Power House, Lloyd Barrage Works, Sukkur.
171	Two-ton overhead travelling and traversing crane for Oudh and Rohilkhand Railway, Lucknow.
172	Centrifugal pump for the Lloyd Barrage Works, Sukkur, Sind.
173	Machine tools and other plant for the Central Workshop, Mysore Railway.
174	Transformers for the Lloyd Barrage Works, Sukkur.
175	Diesel oil engine driven dragline excavators caterpillar type.
176	Workshop plant and machinery for the Lloyd Barrage Works, Sukkur.
177	Miscellaneous substation equipment for the Lloyd Barrage, Sukkur.
178	Poles for overhead power distribution for the Lloyd Barrage, Sukkur.
179	Electrification of Mari-Indus Military Engineering Services (Northern Command).
181	Portable pump for petrol.
182	Oil engine driven generators and switchboard for Razmak.
183	Flexible air hose for the Sutlej Valley Project.
184	Sub-station equipment for Municipal Board, Mussoorie.
185	Steelwork and roofing for stables for the Assistant Garrison Engineer, Military Engineering Services, Bareilly.
186	Steam driven rope operated overhead travelling and traversing crane

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
187	Paraffin engine D. C. generator set for Quetta.
188	Motor driven oil pump and piping for the Power Supply, Lloyd Barrage Works, Sukkur.
189/R	Steelwork and roofing for Power House, Shahjahanpur Military Engineering Services.
190	Hand operated overhead travelling and traversing crane.
191	Counterbalance boxes for sluice gates for Ferozepore Weir, Sutlej Valley Project.
192	Low pressure turbine driven generator set, Condensing plant and accessories.
193	Storage battery for Imperial Institute, Veterinary Research, Muktesar.
194	Oil engine driven D. C. generator sets and switchboard for Military Engineering Services, Jhansi.
195	Steelwork Jaipur Power House, Jaipur Station.
196	Pumping equipment for Kohat District.
197/R	Steelwork and roofing for Military Engineering Services, Razmak, Waziristan.
198	Tube well with motor driven pump.
199	Ford lorry 1 ton for Orki, Sutlej Valley Project.
200	Steel trough flooring, Military Engineering Services.
201	Water tube boiler for Forest Research Institute, Dehra Dun.
202	Double girder hand operated overhead travelling and traversing crane.
203	Combined dragline excavator and grab-ditcher for Sheikhupura Division, Punjab.
204	Pressed steel tanks for Assistant Garrison and Royal Engineer, Lahore.
205	Electrically driven centrifugal pumps for the Sultej Valley Project.
206/R	Boulton water elevator for Military Engineering Services, Quetta.
207	Refined oil engine for the Assistant Garrison Royal Engineer, Lahore.
208	Vertical boiler for steam pump 100 lbs. per sq. inch pressure for Military Engineering Services, Lahore.
209	Self-supporting steel chimney for Military Engineering Services, Clothing Factory, Shahjahanpur.
210	A 10-ton steam road roller for Military Engineering Services, Abbottabad.
211	Hoist, drag derricking and tipping ropes and slewing stays for No. 300 dragline excavator, Ruston's make.
212	Lancashire boiler for the Opium Agent and Commissioner of Income Tax, United Provinces.
213	Mortar mills and motors for the Lloyd Barrage and Canal Construction, Sukkur.
214	Road roller equipment for the Public Works Department, Irrigation Branch, Punjab.
215	Power distribution equipment for Jaipur.
216	Mild steel tanks for water storage for the Legislative Council Chambers, Imperial Delhi.
217	A steel barge for the Indian Cotton Committee.
218	Electrically driven pumping equipment for water supply, Military Engineering Services, Bareilly.
219/R	Steel trusses for workshops roof and steelwork and roofing for siding shelters for Military Engineering Services, Shahjahanpur.
220	Mild steel tank with steel staging and complete with galvanized corrugated sheet steel curved roof for Military Engineering Services, Ranikhet.
221	Petrol engine driven centrifugal pumping equipment, Fire Protection Scheme, Royal Air Force, Risalpur.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
222	Self-sustaining pulley block and trolley for water supply, Military Engineering Services Bareilly.
223/R	Storage tank, hand pumping storage cabinets and filters for lubricating oils for the Government Postal Press, Aligarh.
224	Power station plant for Ferozepore Cantonment.
225	Steam road rollers.
226	Lea coal meter for mechanical stoker.
227	Electrical distribution equipment for Jaipur.
228	Light railway materials for the Lloyd Barrage Works, Sukkur.
229	150 B. H. P. 3,300 volts motor for the Ginning Factory, Jaipur.
230	Electrically driven tube well pumping sets for Multan Water Works.
231	Dog spikes for the Lloyd Barrage Works and Canal Construction.
232	Fishbolts and nuts, fishplates and 62 or 60 lbs. rails for the Lloyd Barrage Works and Canal Construction.
233/R	Portable stone crushers with screens and crude oil engine or alternatively electric motor driven for the Lloyd Barrage Works, Sukkur.
234/R	Stone breaking plant, screens, hoppers and oil engine for the Lloyd Barrage and Canal Construction, Sukkur.
235	Right and left hand turnouts for the Lloyd Barrage and Canal Construction.
236	Target frames for Military Engineering Services.
237	Mild steel moulding boxes for moulding concrete blocks for Lloyd Barrage Works.
238	Vertical cross tube boiler for the Agricultural Department, Government of India Bangalore.
239	Steel bins for pneumatic tyre stores, Military Engineering Services.
240	Disintegrators with portable steam engines for surkhi grinding.
241	Oil engine centrifugal pumping sets for sewage water, Public Works Department, Punjab.
242	Light railway construction track and stock for Lloyd Barrage Works, Sind.
243	Water supply plant for Lloyd Barrage Works, Sukkur.
244	Fishplates, fishbolts and nuts for Lloyd Barrage Works, Sukkur.
245	Galvanized steel tanks for Lloyd Barrage Works, Sukkur.
246	Tip trucks.
247/R	Plywood chests for Benares Opium Agency.
249	Black asphalt and bitumen for the Public Works Department, Central Provinces.
250	Rack bars for canal regulators, Irrigation Department, Baluchistan.
251	Oil piping and pump for Jaipur.
252	Rubber tyred platform trucks for carriage of boxes.
253	Lever boxes and lever connecting rods for the Lloyd Barrage Works, Sukkur.
254	Blocks and wire rope for Islam Division, Sutlej Valley Project.
255	Chlorinator tanks for Military Engineering Services.
256	Switchboard for Military Engineering Services, Rawalpindi.
257	Steam or hand operated crane for use on broad gauge for Sutlej Valley Project.
258	Jolly boats for Lloyd Barrage Works, Sind.
259	2′-0″ gauge locos, tip trucks, 20-lb. rails, crossings.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
260	One manual fire engine for the Lloyd Barrage Works, Sukkur.
261	Oil engine driven centrifugal pumping set for Military Engineering Services, Waziristan.
262	Pipework and fittings for Jaipur Power Plant.
263	Rotary balancer set and switchboard for Military Engineering Services, Lahore.
264	Electrically driven pumping equipment for pumping station, West Ridge, Rawalpindi.
265/R	Steelwork and roofing material for Military Engineering Services.
266	Boring tools and plant for Central Canal, No. 2 Division.
267	4-ton petrol lorries, Mandi Hydro-electric scheme.
268	Hoisting grabs, for the Executive Engineer, Islam Division, Sutlej Valley Project.
269	Oil engine driven power pumping plant for Matheran Water Supply.
270	Sentinal patent locomotive.
271	Motor driven fuel oil pumping set and pipework for power station Salt Range Division, Khewra.
272	Tip wagons.
273	25 B. H. P. kerosene oil engine for Military Engineering Services, Mandalay.
274	Iron wheel barrows.
275	Boring tools and plant for Canals Construction, Western Circle, Karachi.
276	Alumina-ferric.
277	Direct current and single phase alternating current ceiling fan.
278	Railway material metre gauge.
279	Goods lifts for Imperial Record Office and Secretariat West Wing, Delhi.
280	E. H. T. main feeder panels for the Public Works Department, Delhi.
281	Steel materials for North Western Railway.
282	Motor driven house service centrifugal pumping equipment for Public Works Department, Delhi.
283	20-30 H. P. Flat touring car, Model de luxe 510.
284	Internal combustion tractor and ploughs for the Public Works Department, Delhi.
285	Motor launches and Norwegian skiffs.
286	Alumina-ferric for the Public Works Department, Delhi.
287	Mild steel moulding boxes for moulding concrete blocks.
288	Dogspikes.
289	Disintegrator, circular saw and band saw.
290	Two-ply boards.
291	5 K. W. oil engine driven generator sets switchboard and pumping sets for Jandola.
292	Asphalt and tar, etc., for the Public Works Department, Punjab.
293	Power plant for Nagpur station, Great Indian Peninsula Railway.
294	Portable internal combustion engine air compressor set.
295	Electrically driven overhead hoisting traversing and travelling cranes for the Chief Forest Officer, Andamans.
296	Tip wagons.
297	Water meters.
298	Motor launch.
299	Fire extinguishers.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
300	Automatic and manual telephone equipment for Hydro-electric scheme, Punjab.
301	Hand or bullock power pump.
302	Steam road rollers tandem type.
303	Combined steam grab and dragline excavators.
304	Electrically driven centrifugal pumping equipment for Military Engineering Services, Rawalpindi.
305	Four tyne scarifier, independent type.
306	Asphalt cookers and bitumen boilers.
307	Steel water tank and staging.
308	Tin trays for the Postal Department.
309	54′-0″ span supporting girders and sliding doors.
310	Vertical boiler and feed pump.
311	Cement testing apparatus.
312	Double bogie cars and platform wagons 2′-0″ gauge.
313	One K. W. petrol-paraffin engine driven dynamo set with switchboard for Military Engineering Services, Murree.
314	Sheet steel flume.
315	Diesel oil engine and ice making plant for the Maclagan Engineering College, Moghalpura, Lahore.
316/R	3 spans of 23′-6″ clear.
317	Mild steel moulding boxes for moulding concrete blocks.
318	Shafting, cranks, etc., for electrically driven punkhas.
319	Steam operated pump and steam plant for Poona Water Works.
320/R	Oil engine driven power plant for Kapadvanj water supply.
322	Bridge girders for Assam Bengal Railway.
323	Portable workshop for use with dragline excavator for Sukkur.
324	Steel flexible wire ropes, galvanized for the Public Works Department, Punjab.
325	Trucks, mild steel for 2′-6″ gauge for the Northern India Salt Revenue Department.
326	Weighbridge for broad gauge track for the Public Works Department, Punjab.
327	Steam driven pumping plant for the Public Works Department, Central Provinces.
328	Steel moorings buoys.
329	Road rollers for the Public Works Department, Central Provinces.
330	Motor driven pumping plant and chlorinator for Military Engineering Services, Kohat.
331	Ash handling plant for the East Indian Railway, Muradabad.
332	Grain handling plant for the Public Works Department, Bihar and Orissa.
333	Motor launch for the Public Works Department, Punjab.
334	Steam loco. crane for 5′-6″ railway track for Public Works Department, Punjab.
335	Iron gates for canal.
336	Oil engine driven power plant for North Western Railway, Peshawar.
337	2½ K. W. paraffin-oil engine driven dynamo.
338	One span 8′-2″ clear for Mysore Railways.
339/R	Oil engine driven rock crushers and concrete mixers for Madras.
340	Oil engine driven stone crushing plant for the Public Works Department, Punjab.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
341	Oil engine driven D. C. set and switchgear for Imperial Institute of Veterinary Research, Muktesar.
342	51 spans of 20′ overall, with 11·1 ft. centres of main girder.
343	Filtrator or similar scale removing apparatus for Public Works Department, Punjab.
344	Tanks wrought iron for fuel oil for Public Works Department, Sind.
345	2′ gauge locos. and trucks for the Public Works Department, Punjab.
346	One span 60′-0″ clear (Metre gauge).
347	Steam engine and boiler wood fired, for operating a ropeway for the Forest Department, Punjab.
348	Road rollers, gritting machine, and bitumen boilers for the Public Works Department, Punjab.
349/R	Top feed clack boxes for locomotives for the North Western Railway.
350	Peshawar Cantonment power station plant steam engine driven for Military Engineering Services.
351	Oil engine D. C. generators and switchboard, etc., for North Western Railway, Bhatinda.
352	200 galvanized iron watering troughs for Mobilization purposes.
353	Steelwork and roofing for covered stands for Mules, Military Engineering Services.
354	20/25 K. W. generator sets and 16 K. W. portable paraffin sets, for Military Engineering Services, Lahore.
355	10 K. W. generators and switchboard for Military Engineering Services, Multan.
356	Pumping plant, crude oil engine and accessories for Military Engineering Services.
357	Hand operated gantry crane, pulley blocks, etc., for Punjab Hydro-electric branch.
358	Roof trusses and sliding doors.
359	2-100 K. W. at ·8 P. F. oil engine driven A. C. generators for Cauvary Metur Project for Irrigation Department, Madras.
360	2-40 K. W. oil engine D. C. generator for North Western Railway, Amritsar.
361	Paraffin oil engine driven generator.
362	Steel almirahs and galleries.
263	Oil engine pumping plant for Ranikhet.
364/R	Oil engine pumping plant for Lansdowne.
365	One electric motor for Railway Department, Railway Board.
366	Motor and controlgear for the Forest Research Institute, Dehra Dun.
367	Electric driven pumping sets, switchgear and transformers for Gun Rock, Secunderabad.
368	Crude oil engine driven three throw ram pumps and spares for Hangu Water Works, North West Frontier Provinces.
369	Steel troughs.
370	Vertical cross tube boiler for Wellington.
371	Two 50 B. diesel engine driven Bucyrus dragline excavators.
372	Alum mixing equipment and chlorinating plant for Muktesar Water Supply, Muktesar.
373	Plant for deep well boring in alluvial soil for the Agricultural Department, Punjab.
374/R	Refrigerating pipe coils for cold storage rooms, etc.
375	Hot water apparatus for Military Engineering Services, Harnai.
376	Salt screening plant for Khewra.
377/R	Motor boat for the Public Works Department, Delhi.

APPENDIX X-A—*contd*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
378	Compressor set, A. C. motor driven, for Salt Department, Northern India.
379	Electric substation plant (static transformer, condenser, etc.), for Military Engineering Services, Jubbulpore.
380	Motor alternator set with transformer, switchgear and instruments for extra high tension tests for the Government Test House.
381	Oil engine driven tube well pumping set for North Western Railway, Montgomery, Multan and Saharanpore.
384	Pumping plant crude oil engine and accessories.
385	Oil engine driven pumping plant and accessories for Arawali Water Works, Military Engineering Services.
386	Tanks for fuel oil.
387	Tipping wagons broad gauge, for Lloyd Barrage Works, Sukkur.
388	Motor driven centrifugal pumping sets for Salt Mines.
389	Alternating current punkah motors, reduction gears and control panels for Military Engineering Services, Agra.
390	Anchors.
391	Heating apparatus, hot water for Rawalpindi, residence of General Officer, Commanding Northern Command, Military Engineering Services.
392	40 K. W., 440-220 volts D. C. generating set, cooling plant, crane, switchboard and connecting cables for Ambala, North Western Railway.
393	30 K. W. 440-220 volts, D. C. generating set, cooling plant, crane, switchboard and connecting cables for Khanewal, North Western Railway.
394	Oil engine driven direct current generating sets for Military Engineering Services, Jhansi.
395	Windmill and pumping plant for the Agricultural Department, Punjab.
396	Motor driven centrifugal pumping sets for tube wells.
397	Electrically driven 3-throw ram pump for Military Engineering Services, Ferozepore.
398	Road rollers for Public Works Department, Central Provinces.
399	Chests, tool, empty (blacksmiths, carpenters and wheelers).
400	Paper insulated lead sheathed and steel tape armoured D. C. cables and boxes, for Public Works Department, Delhi.
401	Electrical testing equipment for the Assistant Controller of Inspection, Delhi.
402	Indicators of steam and internal combustion engines for the office of the Assistant Controller of Inspection, Delhi.
403	Steelwork for proposed shed at Kurla for Inspection and repairs of electric cars.
404	V. I. R. single core cable and distribution boards for Lloyd Barrage Works, Sukkur.
405	Locomotive fittings for North Western Railways.
406	Steel troughs.
407	7 K. W. oil engine dynamo set, etc., for Nathiagali.
408	Tower wagon.
409	Pressed steel tank on steel staging.
410	Squirrel-cage motor and control gear for centrifugal pumps for Lloyd Barrage Works, Sukkur.
411	Kerosene oil engine driven pumping set for Military Engineering Services, Sabathu.
412	Steel tanks and staging.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
413	Portable compressor set for the Central Provinces District, Military Engineering Services.
414	High tension paper insulated electric cable, and truck type cubicles for the Galogi power station, Mussoorie.
415	Steel wire rope (galvanized).
416	Power distribution equipment for the Mussoorie high tension transmission system.
417/R	Dragline excavator for Lower Chenab Canal, Punjab.
418	Telescopic ladder for the Legislative Buildings, Delhi.
420	Target apparatus.
421	3-ton portable workshop crane for Garrison Engineer, Secunderabad.
422	Additional condensing plant for Peshawar power station for Military Engineering Services.
423	Motor driven Sirocco fans for Salt Mines, Khewra.
424	Canal gate steel.
425	Steel road bridges.
426	Motor generator set and battery equipment for Prince of Wales Royal Indian Military College, Dehra Dun.
427	Watering carts.
428	Air lift plant.
429	Water sterilizer, chlorine gas type, for the Public Works Department, Delhi.
430	Electric distribution boards for Government House, Imperial Delhi.
431	Crude oil engine pumping plant and piping for Lloyd Barrage Works, Sukkur, Sind.
432	Steelwork and roofing for the Power House, Dehra Dun.
433	Oil engine driven tube well centrifugal and air lift pumps for North Western Railway.
434	Oil engine driven generating set and switchboard for the Military Engineering Services, Landikotal.
435	Oil engine driven pumping plant and steel storage tanks for the Public Works Department, Central Provinces.
436	Steel tank with staging.
437	Ice-making plant.
438	Roof trusses.
439	66 K. V. A. motor alternator sets and switchgear for the electrification of "K" Supply Depot, Peshawar.
440	Collapsible gate.
441	Wrought iron railing.
442	Shower baths.
443	Hot water boiler for the central heating system at the Sandeman High School, Quetta.
444	Hand operated overhead traversing and travelling crane, stanchions, crane gantry and accessories.
445	Oil engine driven air lift tube well water pumping equipment for Sikandra, Agra.
446	Steel road bridges.
447	Oil engine driven generating set for the College, Rungpore.
448	Hydro-electric plant for the Upper Ganges Canal.
449	Oil engines for Reserve Engineering Stores, Lahore Cantonment.
450	Centrifugal and deep well pumps for Reserve Engineering Stores, Lahore Cantonment.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
451	Oil engine driven generating set for the Military Engineering Services, Malapuram.
452	Spans of various lengths for Shimoga Arsalu Railway (Mysore).
453	Steelwork and roofing for office and stores building, Mussoorie Electric Supply Extensions.
454	Switchboard and V. I. R. cable for Uhl River Hydro-electric Project.
455	Tipping trailors for Uhl River Hydro-electric Project.
456	Steelwork for mild steel railings.
457	Overhead hand operated crane for Alimasjid, Peshawar.
458	Oil engine driven direct current generating set for Military Engineering Services, Calicut.
459	Crude oil engine driven direct current generators and electrically driven pumping set for Sararoga and Kotkai.
460	Steel road bridges.
461	Poles and insulators, overhead power distribution for Lloyd Barrage, Sukkur.
462	Copper conductors, cables and switches, for Lloyd Barrage, Sukkur.
463	Steel road bridges.
464	3-80 K. W. sets for Military Engineering Services, Faizabad.
465	Rail motor coaches for Mysore State Railway.
466	Electric Substation plant for Hugh Rose substation, Military Engineering Services, Jubbulpore.
467	Hand operated overhead travelling and traversing crane.
468	Pressed steel tanks.
469	Electrical equipment for the conversion of Scotch derrick hand operated cranes into electric drive for Lloyd Barrage Works, Sukkur.
470	3-ton transformer trucks.
471	Cables and boxes for Military Engineering Services, Lahore.
472	H. T. and L. T. iron clad switch pillars for the Military Engineering Services, Lahore.
473	Incoming H. T. switch cubicles for the Military Engineering Services, Lahore.
474	Grader and tractor for Communication Board, Lahore.
475	Plywood chests for Benares Opium Agency.
476	Tar and pitch boiler for Military Engineer Services, Fort, Delhi.
477	Hand driven concrete mixers for the Public Works Department, Ratu Division, Sutlej Valley Project.
478	Steel sheet piles.
479	Steel almirahs and galleries for map record.
480	Electric equipment for tunnel construction for Uhl River Hydro-Electric Project.
481	Turbo-generator sets and electric head-lamps for Locomotives, Mysore Railways.
482	6 spans of 20-0″ clear and 1 span of 40′-0″ clear.
483	Diesel oil engine driven dragline excavator, caterpillar type, complete with electric lighting plant and fans, for Sutlej Valley Project.
484	Diesel or semi-diesel oil engine driven combined grab and dragline excavator for the Irrigation Works, Punjab.
485	Electric welding plant for Lloyd Barrage, Sukkur.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
486	Goliath crane for Transhipment Yard.
487	Steam operated derrick crane for Dockyard.
488	Ice-making and refrigerating plant for Government House, Delhi.
489	Galvanized steel wires.
490/R	The supply and installation of electric cooking appliances at Government House, New Delhi.
491	Mooring buoys for Lloyd Barrage Works, Sukkur.
492	Automatic sprinkler installation and fire alarm system for Record Office Building, New Delhi.
493	Electrical substation plant and equipment for His Majesty's Mint, Calcutta.
494	Cast iron sluice gates.
495	Plant for Nasirabad power station for the Military Engineer Services, Nasirabad, Rajputana.
496	Direct current punkah motors, reduction gears and control panels for Military Engineering Services, Lucknow.
497	One integrating watt-hour meter portable type for His Majesty's Mint, Calcutta.
498	Testing instruments and apparatus for the Workshops and Machinery Division, Cauvery-Metur Project.
499	Fuel-oil carts for the Military Engineering Services, Fyzabad.
500	Oil-engine generator sets and control panel for Drigh Road Power Station, Military Engineering Services, Karachi.
501	One portable testing poly-phase A. C. integrating watt-hour meter and six single-phase A. C. service watt-hour meters for the Public Works Department, Delhi.
502	One petrol driven motor omnibus suitable for 25 to 30 passengers for the Indian School of Mines, Dhanbad.
503	Pressed steel tank on steel staging for the Military Engineering Services, Agra Cantonment.
504	Electrical testing instruments for the Indian School of Mines, Dhanbad.
505	One 48″ central-drive type motor driven railway wheel lathe for Kanchrapara Workshops, Eastern Bengal Railway.
506	Switchboard type ammeters and voltmeters for the Indian School of Mines, Dhanbad.
507	Portable sack type steam disinfector sets for the Inspector-General of Prisons, Madras.
508	Three 40 K. W. 240/480 volts, 3 wire, oil engine D. C. generating sets, etc., for the Campbellpore Cantonment Power Station, Military Engineering Services.
509	Generating plant for Kamptee power station, Military Engineering Services.
510	Air compressor sets for the Quarries Division, Sukkur.
511	Drill steel bar for rock drills for the Quarries Division, Sukkur.
512	Steel wire rope for 20-ton steam cranes and 15-ton hand crane.
513	Electrical plant and equipment for the Indian School of Mines, Dhanbad.
514	Steelwork and roofing for Simla Power House for the Guma Water Works Scheme.
515	Two air compressor sets for the Eastern Bengal Railway.
516	One 15 K. W. oil engine generator set, switchboard and plant for the Lawrence Royal Military School, Sanawar.
517	One light locomotive, 5′-6″ gauge, for the Lower Bari Doab Canal Railway, Punjab.
518	Steelwork for Postal and Telegraph buildings at Sukkur.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No. Subject.

519 Suction chlorinators (experimental) for the Reserve Engineers Stores, Lahore Cantonment.

520 Electrical testing instruments and plant for the Military Engineering Services, Fyzabad.

521 Oil cabinets, 100 gallons capacity, for workshops for the Military Engineering Services, Fyzabad.

522 Two 5 K. W. oil engine generator sets with cooling tanks and switchboard for the North-Western Railway, Moghalpura.

523 One 600 tons Hydraulic wheel press for the Eastern Bengal Railway, Kanchrapara.

524 One mercury-arc rectifier for battery charging for the Power Supply Division, Sukkur.

525 One motor driven rotary pump for pumping fuel oil for the Military Engineering Services, Landikotal.

526 Tools for small workshop for Superintending Engineer, IV Circle, Punjab Public Works Department, Lahore.

527 Tower wagon for the Military Engineering Services, Fyzabad.

528 Power Station for Madras (St. Thomas Mount).

529 One railway turn-table 4′-8½″ gauge for the Deccan Irrigation Circle, Public Works Department.

530 Motor driven centrifugal pumping sets for the Military Engineering Services, Lucknow.

531 Steelwork for trusses, purlins, etc., for the Railway Staff College, Dehra Dun.

532 Combined wall-plug and switch (Wandsworth pattern) for Government House and Legislative Buildings, New Delhi.

533 Windmill driven pumps for the water-logging committee, Punjab.

534 Aeroplane hangars at Quetta, Lahore and Kohat for the Royal Air Force.

535 Tank for fuel oil.

536 One 3-ton hand-operated travelling and traversing crane, rails and rail girders and stanchions for the Military Engineering Services, Kamptee.

537 Plant for tube-well at Peshin Fort, Yaru, for the Military Engineering Services, Baluchistan District.

538 Steel road bridges for Sutlej Valley Project.

539 Oil engine driven pumping set for the Public Works Department, Manipur.

540 Steel arch centres for Lloyd Barrage Works, Sukkur.

541 Tube-well pumps and oil engine driven air compressor plant for Gujranwala for the Public Works Department, Punjab.

542 Low lift centrifugal pump, suction piping and foot valve for the Central Workshops, Public Works Department, Amritsar.

543 Serge and khaki drill coats for Survey of India menial staff.

544 Rock crushing and granulating plant for the Hydro-electric Branch, Public Works Department.

545 Steel wire rope for derrick boat.

546 Bitumen melting boilers and spraying machines for the Military Engineering Services, Lahore.

547 Trucks for carrying 4″ pump sets.

548 Hydraulic rams and accessories for the Military Engineering Services, Lansdowne.

549 Switchboards, field, and switch units magneto for the Director of Contracts, Army Headquarters.

550 Grooved victualic-jointed piping 4″ bore and victualic joints for the Reserve Engineer Stores, Lahore.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
551	One 36 feet passenger motor launch for the Military Engineering Services, Northern Command.
552	Six-inch cast iron water columns for the Mysore Railways.
553	Portable engine driven air compressor set and rock-drilling apparatus for motor lorry transport for the Army Headquarters, Simla.
554	Machine shop and joiners shop machine tools for the Saidpur Loco Workshops, Eastern Bengal Railway.
555	Composite tunnel and watering pipe line for the Hydro-electric Branch, Public Works Department, Punjab.
556	Steelwork and roofing for the Power House, Fyzabad.
557	Locomotive cranes for handling coal.
558	One sewing machine for the Saidpur Loco Workshops, Eastern Bengal Railway.
559	Paint mills and mixing machines for the Saidpur Loco Workshops, Eastern Bengal Railway.
560	Wet concrete mixers, ½ cubic yard capacity, for the Hydro-electric Branch, Public Works Department, Punjab.
561	Belt driven air compressor sets for the Quarries Division, Sukkur.
562	Pulleys, counter-shafting equipment and belting for Hydro-electric Branch, Public Works Department, Punjab.
563	Ventilated pipes and specials for tunnel.
564	Portable steam engine 19 B. H. P. for the buildings and Roads Branch, Public Works Department, Punjab.
565	Machine shop, machine tools and accessories for the Kanchrapara Loco Workshops, Eastern Bengal Railway.
566	One floor operated 5-tons electric overhead travelling crane for the Kanchrapara Loco Workshops, Eastern Bengal Railway.
567	Castor and mustard seed oil extracting plant for the Central Jail, Lahore, Punjab.
568	Pole mounting transformer and electrical fittings and accessories for the Government High School, Peshawar.
569	Direct current punkha motor sets and controller panels for the Military Engineering Services, Mandalay.
570	Main switchboard for Government House, New Delhi.
571	Timber twin ferry boat for use on the river Sina for the Public Works Department, Sholapur, Bombay.
572	Bridges for Lloyd Barrage and Canals Construction, Sukkur.
573	Hot water heating installations for the British Indian Military Hospital, Quetta.
574	Portable petrol kerosene oil engine driven centrifugal pumping set for the Irrigation Branch, Public Works Department, North-West Frontier Province.
575	One ice-making plant 600 cwts. capacity for the Irrigation Branch, Public Works Department, Malakand, North-West Frontier Province.
576	Steel frame windows.
577	Gas engines producer gas plant and centrifugal pumps for Chingleput, Madras.
578	2′-0″ gauge rail and road bridge over Panjnad Weir.
579	Steelwork and roofing sheet for grain crushing plant for the Military Engineering Services, Peshawar.
580	Single phase out-door type lighting transformers and accessories for the Hydro-electric Branch, Public Works Department, Punjab.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No. Subject.

581 Oil engine and centrifugal pump and accessories for Military Engineering Serivces, Fort Akalgarh, D. I. Khan.

582 Out-door type 250 K. V. A. transformer for the Thuji temporary power station for the Hydro-electric Branch, Public Works Department, Punjab.

583 Motor driven tunnel unwatering centrifugal pumping sets for the Hydro-electric Branch, Public Works Department, Punjab.

584 Steel pipe line, valve and accessories for temporary power plant at Thuji for the Hydro-electric Branch, Public Works Department, Punjab.

585 Cables, joint boxes, tri-furcating, bifurcating and Tea boxes for the Public Works Department, Delhi.

586 Stranded galvanized all steel overhead ground wire ⅜" diameter for the Chennapatna electrification.

587 Boring tubes and fittings.

588 25 K. W. 420 volts, 3-phase, oil engine driven alternator sets complete with exciters, water cooling plant, compressor sets, main oil fuel storage tank, pipework, crane, switchboard and connecting cables and accessories for the Kalka power station, North-Western Railway.

589 Two motor driven centrifugal sewage pumping sets for the Nigambodh pumping station, Public Works Department, New Delhi.

590 Machine shop, machine tools, and accessories for the Saidpur Loco Workshops, Eastern Bengal Railway.

591 Plant and equipment for the Government Institute of Dyeing and Calico Printing, Shahdara.

592 Direct current punkha motor sets and controller panels for the Military Engineering Services, Kamptee.

593 Dragline excavators for the Chief Engineer, Irrigation Department, Damodar Canal Project.

594 One 12" × 36" precision grinding machine and accessories for the Royal Air Force Depôt, Drigh Road, Karachi.

595 Steam winches for operating grabs in well curbs for the Public Works Department, Burma.

596 Lancashire boiler and boiler settings, and two 15 K. W. Steam engine driven D. C. generator sets for the Government Opium Factory, Ghazipur.

597 Roof trusses and purlins.

598 Main shafting with collars, wall brackets, wall box, plummer blocks, Camel hair belting fast and loose main pulleys, and belt striking gear for the Burewala Workshop, Public Works Department, Punjab.

599 One hand-operated overhead travelling crane.

600 Machine shop and joiners shop machine tools and accessories for Rawalpindi Arsenal.

601 Belt-driven vertical boring machine for joiners shop for Ferozepore Arsenal.

602 Locomotive crane, 5'-6" gauge.

603 Khaki drill shirts and khaki cotton canvas tunics.

604 Permanent-way materials for the Mysore Railways.

605 Kite motion pumps for the Hassan Division, Mysore State Railways.

606 Oil engine driven direct current generating plant for the Military Engineering Services, Murree Hospital.

607 4 cubic yard tip trucks and 7½ tons platform wagons for the Hydro-electric Branch, Public Works Department, Punjab.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No. Subject.

608 Additional oil engine driven direct current generating set for the Military Engineering Services, Kamptee.

610 Oil engine driven centrifugal pumping sets for the Military Engineering Services, Chaklala.

611 Internal combustion Locomotives 2′-0″ gauge for the Irrigation Department, Bengal.

612 Exhaust steam feed water heater for the cantonment power station, Ambala, Military Engineering Services.

613 Electric, three motor type overhead hoisting, traversing and travelling 5-ton crane and accessories for the Chief Forest Officer, Andaman Isles.

614 One 20 K. W. steam engine generator set and control panel and one 20 K. W. belt driven generator and control panel for the Chief Forest Officer, Andaman Isles.

615 Electrically operated self-propelling loco cranes for Lloyd Barrage Works.

616 Portable petrol engine centrifugal pumping sets, suction and delivery piping and accessories for the Irrigation Department, Bengal.

617 Motor driven air compressor equipment.

619 Gur and Mohwa seed distilling plant for the Jaipur State Distillery, Jaipur.

620 Two portable steam engines, 19 B. H. P., and mortar grinding mills for the Irrigation Department, Bengal.

621 Half cubic yard capacity A. C. motor driven portable wet concrete mixers for the Lloyd Barrage Circle, Sukkur.

622 Road rollers for bullock draught for the Punjab Public Works Department.

623 One 10-ton capacity overhead hand-operated travelling crane for the Military Engineering Services, Campbellpore.

624 Steel rolling shutters for garages and coach-houses for residential quarters, Government House, New Delhi.

625 Grooved victualic-jointed piping 4″ bore and victualic joints for the Reserve Engineer Stores, Lahore.

626 Oil engine driven D. C. generating set for Royal Air Force, Thal.

627 Steel road bridges for Lloyd Barrage and Canals Construction, Sukkur.

628 Steelwork and roofing for covered stands for mules, Military Engineering Services.

629 Steam engine and generator for Assistant Engineer, Por tBlair.

630 Textile weighing scales and cloth testing machines.

631 Permanent-way material for the Mysore State Railways.

632 Balancer set D. C. for Chief Engineer, Northern Command.

633 One hand-operated overhead travelling crane.

634 Shouldaries.

635 Bridge girders :—

4 spans of	40 ft.	clear	for Assam-Bengal Railway.
16 ,,	20	,,	
2 ,,	12	,,	
9 ,,	6	,,	

636 Oil engine driven centrifugal pumping sets for the Public Works Department, Kandhkot, Jacobabad.

637 One hand-operated overhead hoist travelling on beam fixed in walls.

638 Galvanized steel tanks.

639 Weigh bridges.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
640	Electrical equipment for the conversion of hand-operated permanent-way crane into electric drive for the Lloyd Barrage, Sukkur.
641	Fire-bricks, fire bars, etc., for the Punjab Public Works Department, Chakawali.
642	Pressed steel tank with staging for the Military Engineering Services, Jullundur Cantonment.
643	Water boiler and circulating tank for the Military Engineering Services, Murree.
644	Target apparatus.
645	Electrically driven centrifugal pumping equipment for Military Engineering Services, Jullundur.
646	Cables and steelwork for suspension bridge.
647	One cubic yard capacity oil engine driven concrete mixers for Irrigation Department, Bengal.
648	Disintegrators, shafting, pulleys and accessories for the Irrigation Department, Panjnad Canal works, Punjab.
649	Steel arch centres for the Lloyd Barrage Works, Sukkur.
650	One 10-ton electric overhead travelling crane.
651	Cast iron pipes, specials, etc., for Simla Municipal Committee.
652	Steel bridges.
653	Electric machines for the electrical laboratory of the College of Engineering, Guindy, Madras.
654	Sea-going steam launch for Marine Department, Port Blair.
655	Relief valves on the Quetta water supply main for Headquarters, Western Command, Quetta.
656	Alternating current punkha motors, reduction gears and control panels for the Military Engineering Services, Secunderabad.
657	Recording water metre for Sub-Divisional Officer, Padegaon Sub-Division, Lonand, Madras and Southern Mahratta Railway.
658	Oil engine locomotives, 2 feet gauge, for Lloyd Barrage Works, Sukkur.
659	Outboard type motors, etc., for Lloyd Barrage Works, Sukkur.
660	Fire bricks for the Marine Stores Officer, R. I. M. Dockyard, Bombay.
661	Boiler tubes for Lloyd Barrage Works, Sukkur.
662	Motor lorry for Lloyd Barrage and Canals Construction.
663	Bridge girders, metre gauge, for Assam Bengal Railway.
	(b) Framed during 1928-29.
664	Additional Hydraulic Ram Pump for the Military Engineering Services, Risalpur.
665	Top feed clack boxes for Locomotive for the North-Western Railway.
666	Equipment for the Mining Laboratory for School of Mines, Dhanbad.
667	Points and crossings, complete, for Lloyd Barrage Circle, Sukkur.
668/R	*Shouldaries (Police pattern) for North-West Frontier Province's Police.*
669	Two oil-engine driven, three throw ram pumping sets—replacement plant—for the Military Engineering Services, Kasauli.
670	Laboratory benches, sinks, etc., for the Ross Experimental Station for Malaria, Karnal (Punjab).
671	Motor alternator testing set for the Central Provinces.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No. Subject.

672 Electrical equipment for the Ross Experimental Station for Malaria, Karnal (Punjab).

673 Four oil engine driven, direct current generating sets, switchboard, overhead crane, etc., for the Central Jail, Mach, Baluchistan.

674/R *Shouldarie 14′ × 10′ for the Public Works Department, Arafwala (Punjab).*

675 One oil engine driven, three throw ram pumping sets for the Military Engineering Services, Tangi Pump House, Landikotal.

676 Crane and track 5′-6″ gauge for the Divisional Forest Officer, North Andamans.

677 Ferry steamer for the Public Works Department, Punjab.

678 Trolly, motor driven, required for inspection work by Mysore Railways.

679 Overhead crane for the Imperial Works Division, Public Works Department, Dehra Dun.

680/R *Oil pipe line from Repalli to Chattragadda and pump for oil fuel for the Public Works Department, Madras.*

681 Sea going steam lighter for the Forest Department, Port Blair.

682 Steel road bridge for the Executive Engineer, 1st circle, Rawalpindi.

683 Electrically driven, shearing and punching machine for the Power Station, Khewra.

684 Steam hoist or winches complete with vertical boiler.

685 Saw guards for circular saws for Forest Engineer, Southern Division, Dhanvar.

686 Portable steel road bridges for Engineer-in-Chief's branch.

687 Moving apparatus for mechanical drive of punkahs for the Military Engineering Services, Agra Cantonment.

688/R *Ropes, flexible steel wire for the Executive Engineer, Sutlej Valley Project, Panjnad Weir Division, Ferozepur.*

689 Steel rolling shutters, for garages and coach-houses for Residential Quarters, Government House, New Delhi.

690 Portable electric generating sets for the Military Engineering Services, Waziristan.

691 Boring plant hand or alternatively power driven for the Public Works Department, North-West Frontier Province.

692 Portable photometer set for the Military Engineering Services, Western Command.

693 Direct current Booster plant for the Military Engineering Services, Power Station, Kohat.

694 Storage battery for the Opium Factory, Ghazipur.

695 Alternating current punkah motors, reduction gears and control panels for the Military Engineering Services, Secunderabad.

696 Oil engine driven, direct current generating sets and air lift or deep well pumping plant for the Military Engineering Services, Razmak.

697 Direct-current punkah motor sets and controller panels for the Military Engineering Services, Nasirabad.

698 Oil engine driven alternator sets, cooling plant, fuel tank, switchboard, transformers, Power House Workshop plant, etc., for the Military Engineering Services, Power Station, Ahmednagar.

699 Motor fire engine, hose or couplings for the Public Works Department, New Delhi.

700 Serge drab mixture, dark khaki for the Superintendent, Central Prisons, Ahmedabad.

701 Canvas, khaki, proofed, for the Superintendent, Central Jails, Ahmedabad.

702 Two Fordson Tractor type engines for the Sukkur Barrage and Canals Construction.

703 Dosuti, grey, for the Borstal Institute, Lahore.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No. Subject.

704 Marine type boiler for the Marine Department, Port Blair.

705 Transformers for the Military Engineering Services, Ahmednagar.

706 Carpets for the Public Works Department, Delhi.

707 Motor driven deep well pump for the Public Works Department, Western India States Agency, Rajkot (Kathiawar).

708 One water turbine and two oil engine, 3-wire, direct current, generating sets, switchboard, overhead crane, etc., for the Power Station, Mardan, North-West Frontier Province.

709 Alternating current motors and line shafting for the Military Engineering Services, Quetta.

710 Kabul pals, 7′×7′.

711 One fully automatic, push button control passenger lift for the New Family Hospital, Colaba, Bombay.

712 One high pressure, steam disinfector and vertical boiler for the Director, Central Research Institute, Kasauli.

713 Grey drill, unbleached, for the Borstal Institute, Lahore.

714 Three 10-ton steel barges for the Marine Department, Port Blair.

715 Paper insulated lead covered steel tape armoured cables and boxes for the Military Engineering Services, Kohat.

716/R *Miniature Swiss cottage tent, round ended, for Survey of India, Simla.*

717/R *Field Officers' Kabul pals, 9′×8′, for the Survey of India Department, Simla.*

718 Sowar pal, 10′×8′, square ended for the Survey of India Department, Simla.

719 Survey pal, square ended, for Survey of India Department, Simla.

720 Fly, outer, for double poled regulation tent 10′×10′ for the Survey of India Department, Simla.

721 Tents, necessary, for the Survey of India Department, Simla.

722 Durrie for tents for the Survey of India Department, Simla.

723 Motor generator set and switchgear for Delhi Fort.

725 Alternating current punkah motor sets, reduction gears and control panels for the Military Engineering Services, Peshawar.

726 Two electric type crude oil engines and one starting air compressor set for the Military Engineering Services, Benares.

727 Log frames saw for the Agricultural Adviser to the Government of India.

731 Direct current switchboard for the Power House, Military Engineering Services, Benares.

732/R *Servants' pals.*

733 Tents, necessary, 5′×5′ for the Lloyd Barrage and Canals Construction, Sukkur.

734 Hudson Raoti for Lloyd Barrage and Canals Construction, Sukkur.

735/R *Kabul pals.*

736 Nag Pumping Station for the Military Engineering Services, Ranikhet.

737 11,000 volt overhead power transmission line for the Sumera Hydro-electric pumping and power supply scheme of the Public Works Department, United Provinces.

738 Electrical testing instrument for the Punjab Public Works Department, Hydro-electric Branch.

739 One additional direct current feeder panel for the Military Engineering Services, Kohat Cantonment.

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
740	Steelwork for foot bridges for Mailsi Main Canal.
741	Steelwork and roofing of S. V. P. Standard 'Unit' type.
742	Self-supporting steel chimney, 70′ high × 3′ dia. for the Military Engineering Services.
743	Vests, flannel, for the Marine Department, Bombay.
744	Cotton singlet for the Marine Department, Bombay.
745	Miniature Swiss cottage tent, square ended.
746	Additional turbo alternator set, boiler, superheater and condensing plant for the exist ing Power Station, Public Works Department, Delhi.
747	Heavy oil engine driven, direct current generating set, deep well pumping plant and overhead distributaries equipment for the water supply, Military Engineering Services, Saugar.
748	One motor driven high lift centrifugal pumping set for the Military Engineering Services, Quetta.
749	Socks, woollen, blue.
750	Air vessels required for water supply installation at Thal Military Engineering Services
751	Elliott pattern miniature swiss cottage tent.
752	Trusses, stanchions, etc., for Gun Carriage Factory, Jubbulpore.
753	Electrically driven pumping set for the Ross Field Experimental Station for Malaria, Karnal.
754	Two oil engine, belt driven, three throw ram pumping sets, for the Military Engineering Services, Thal, Kohat District.
755	Bridges, 2 span of 60′ clear and 2 span of 20′ clear for Mysore Railways.
756	Pressed steel tank and staging for the Military Engineering Services, Kohat.
757	Pumping plant for catch water drain for Ferozepore Cantonment.
758	A motor-driven compressor set for the Forest Research Institute, Dehra Dun.
759	Steelwork for Village Road Bridge, Sutlej Valley Project.
760	Two three throw ram pumps for the Military Engineering Services, Ambala.
761	Oil engine driven, direct current, generating sets, switchboard cooling fan equipment, etc., for the Military Engineering Services, Shahgai.
762	5 K. W. alternators and switchgear for the Military Engineering Services, Arawali.
763	Steelwork and roofing for Ordnance Depot, Cawnpore.
764	One oil engine, belt driven pumping set for the Fruit Farms, the Irrigation Department, Quetta.
765	General service tent.
766	Waist belt, leather, for Royal Indian Marine, Bombay.
767	Construction railway turn-outs for the Public Works Department, Punjab Hydro Electric Branch.
768	One ice-making plant for the Military Engineering Services, Landikotal.
769	Miniature swiss cottage tent, square ended.
770	Electric hoist, rock drills and miscellaneous mining plant and machinery for the Indian School of Mines.
771	Pumping plant for the Public Works Department, Sukkur.
772	Water-borne sewage pumping plant for the Military Engineering Services, Northland Ishapore.
773/R	*One 5-ton electric telpher (monorail) complete with track for the Chief Forest Officer, Andamans.*

APPENDIX X-A—*contd.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—contd.

S. R. No.	Subject.
774	Raotis for Lloyd Barrage Canal Construction.
775/R	*Electric, three-motor type overhead hoisting traversing and travelling 5-ton crane and accessories for the Chief Forest Officer, Andaman Isles.*
776/R	*One 30 K. W. steam engine direct coupled direct current, generating set, with one control panel and one feeder panel for the Chief Forest Officer, Andaman Isles.*
777	Cloth drab mixture, great coat for Assam Rifles.
778	Garah cloth for Borstal Institute, Lahore.
779	Dosuti, grey, for Borstal Institute, Lahore.
780	Roof trusses and roofing material.
781	Towels, bath, Turkish.
783	Sponge cloth.
786/R	*Iron work for V. R. bridge, R. D. 1,36,500, Lodhran Branch, Mailsi Main Line Division, Sutlej Valley Project for ferro concrete work.*
787	One 50-ton capacity railway type weigh-bridge complete for the 'K' Supply Depot, Peshawar.
788	Supply and erection of copper sheathing on the exterior of the main dome, Government House, New Delhi.
789	An additional 40 K. W. oil engine driven direct current generating set for the Military Engineering Services, Kamptee.
790	One 200 B. H. P. Diesel oil engine, direct coupled to one 115 K. W. direct current, two wire generator and one generator panel for Sialkot.
791	The supply and complete erection at site of feeders, street lighting and general distribution system for the Public Works Department, North-West Frontier Province.
792	Galvanized steel drinking water storage tanks for Government House, New Delhi.
793	Steel tank for fuel oil storage.
794	One 100 K. W. Diesel oil engine driven, direct coupled, direct current, three wire generating set, static balancer, mechanical cooler, etc., for the Department of Public Works and Irrigation, Bahawalpur State.
795	Stair cases for Class VI Clerks quarters for Headquarters, Eastern Command, Military Engineering Services.
796	Heating apparatus comprising boiler circulating cylinder and storage tank for the Military Engineering Services.
797	Motor-driven, bore hole pumping sets and control gears for the Military Engineering Services Water Supply System, Sialkote.
798	One 66′ length of 1″ ungalvanised iron chain for the Power Supply Division, Sukkur.
799	Cables, joint boxes, etc., for the Public Works Department, New-Delhi.
800/R	*Two ⅞ dia. Lang's lay galvanized steel wire ropes for the Punjab Central Workshops Division, Public Works Department.*
801	Motor-driven centrifugal pump sets for water supply for Government House, New Delhi.
802	Two 2″ circumference galvanized steel wire ropes for the Irrigation Branch, Public Works Department, Punjab.
803	Grooved victaulic-jointed piping 2″ bore and victaulic joints for the Reserve Engineer Stores, Lahore.
804	Alternating current punkah motor sets, reduction gears and control panels for the Military Engineering Services, Ahmednagar and Secunderabad.
805	Pumping station plant and equipment for the Malezai Pumping Station, Irrigation Department, Baluchistan.

APPENDIX X-A—*concld.*

List of Schedules of requirements framed by the Indian Stores Department current at the end of the year 1928-29—concld.

S. R. No.	Subject.
806	Oil engine and workshop plant for the Malezai pumping station, Irrigation Department, Baluchistan.
807/R	*Covers for switches and regulator boxes for the Government House, Delhi.*
808	One 36′—5″ galvanized steel motor launch hull for the Commanding Royal Engineer, Waziristan District.
809	An additional 70 K. W. oil engine, direct current, 3 wire generating sets for the Military Engineering Services, Nasirabad.
810	One 400 K. W., 6-phase rotary convertor, starting panel, H. T. and L. T. switchgear for His Majesty's Mint, Calcutta.
811	Grooved victaulic-jointed piping 4″ bore and victaulic joints for the Royal Engineer's Stores, Lahore.
812	Electrically operated gantry crane for Aircraft, Park Lahore, Royal Air Force.
813	Barge, steel, complete with accessories and crude oil engine for the Chief Forest Officer, Andaman Isles.
814	One 500 K. W., 6-phase rotary convertor (motor convertor), starting panel, H. T. and L. T. switchgear for the Public Works Department, Delhi.
815	Mooring buoys and mooring gear for Chathan and Stewart Sounds, Andaman Isles.

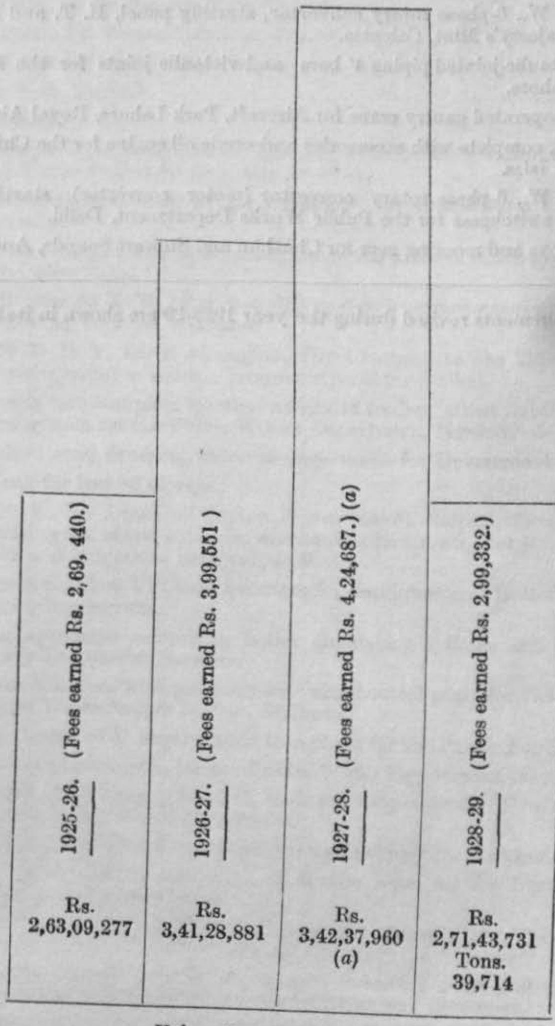
Schedule of requirements revised during the year 1928-29 are shown in italics.

XI (*i*)—Calcutta Inspection Circle.

(*Vide* paragraph 36 of the report.)

(*a*) The figures shown in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned and not those actually adjusted during the year.



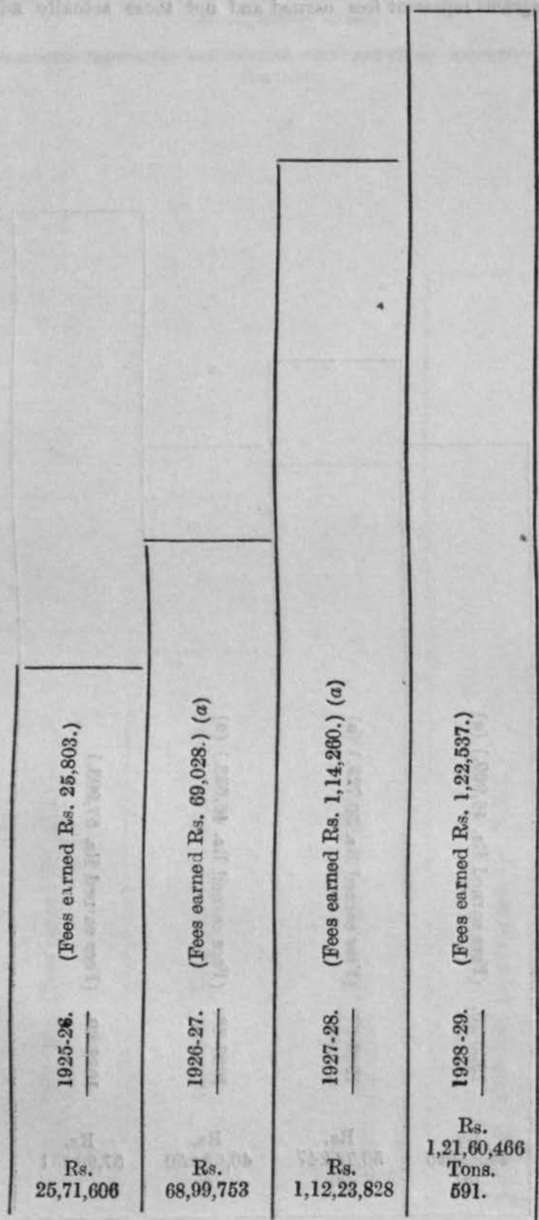
Value of work inspected.

XI (*ii*)—Bombay Inspection Circle.

(*Vide*) paragraph 36 of the report.)

(*a*) The figures shown in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned and not those actually adjusted during the year.



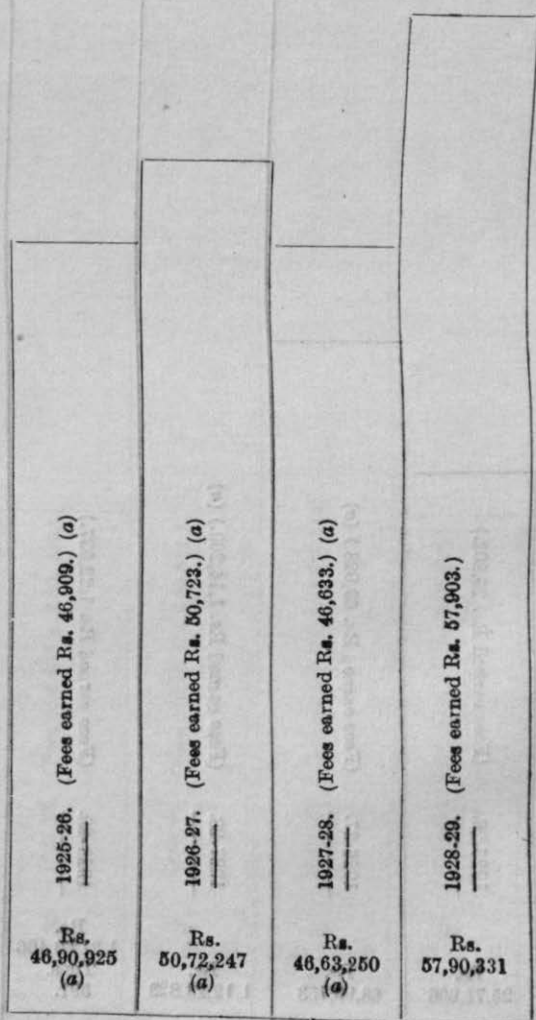
Value of work inspected.

XI (*iii*)—Cawnpore Inspection Circle.

(*Vide* paragraph 36 of the report.)

(*a*) The figures shown in the p evious report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned and not those actually adjusted during the year.



Value of work inspected.

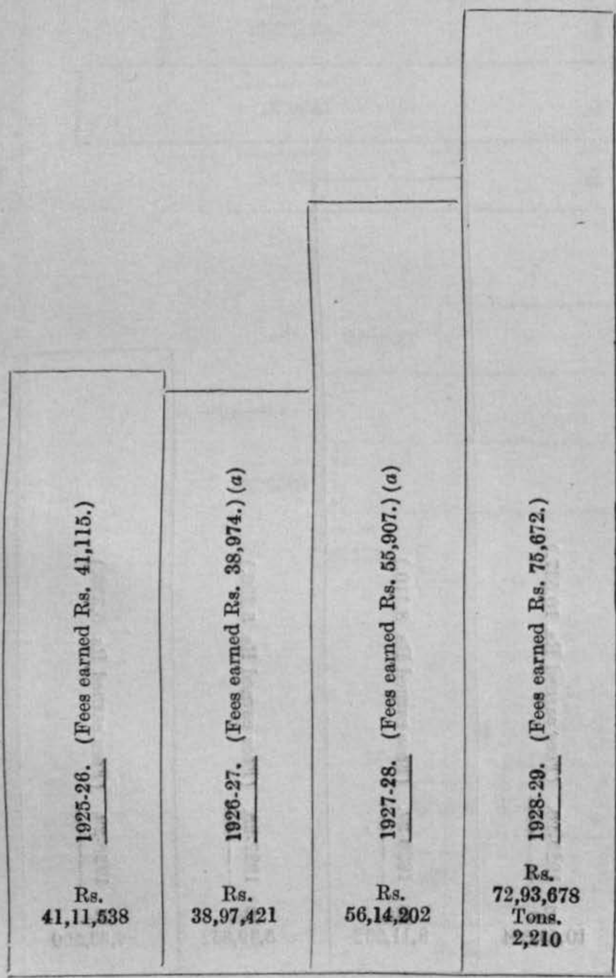
XI (*iv*)—KARACHI INSPECTION AGENCY.

(*Opened in January 1924.*)

(*Vide* paragraph 36 of the report.)

(*a*) The figures shown in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned and not those actually adjusted during the year.



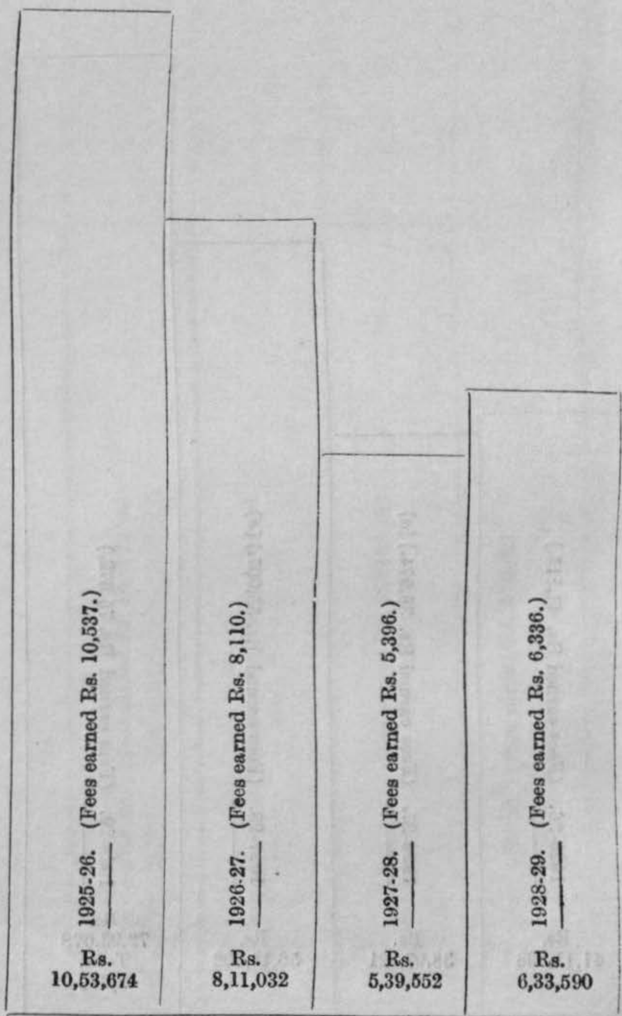
Value of work inspected.

XI (v)—Madras Inspection Branch.

(Opened in July 1924.)

(*Vide* paragraph 36 of the report.)

Note.—The diagrams represent fees earned and not those actually adjusted during the year



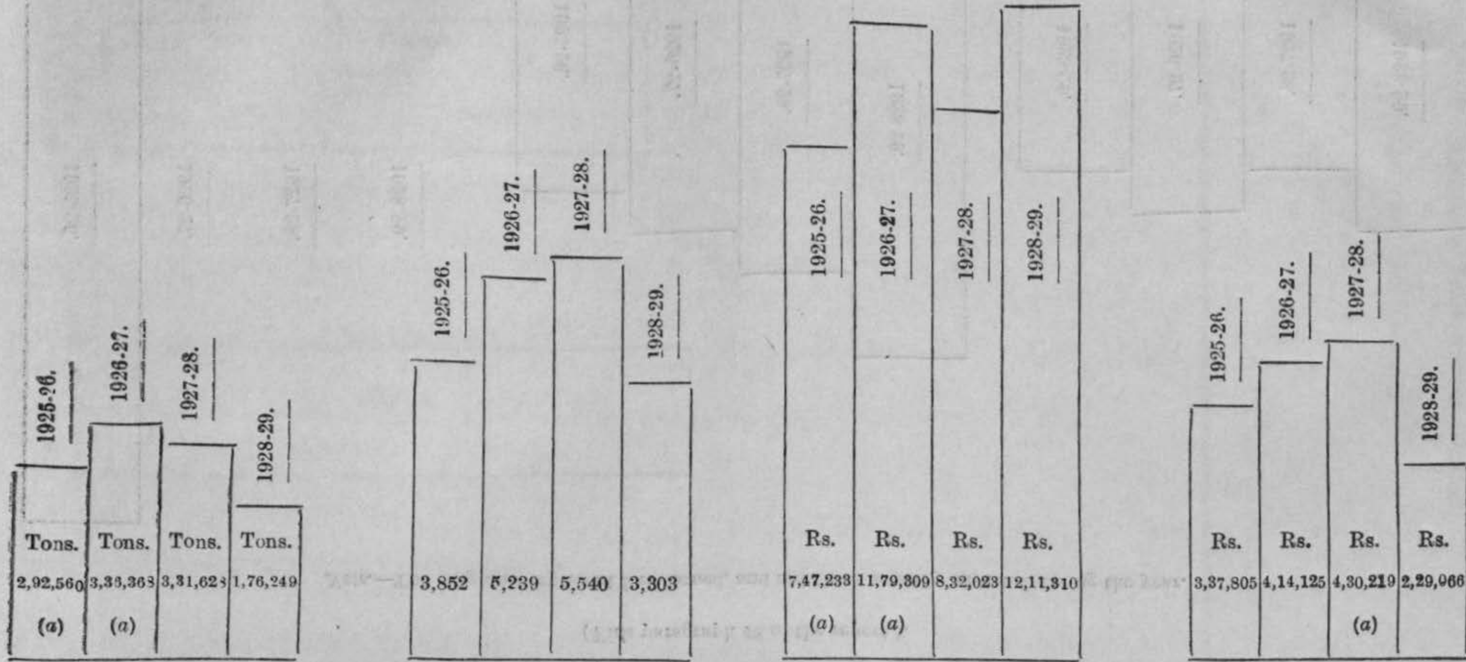
Value of work inspected.

XI (*vi*).—METALLURGICAL INSPECTORATE, JAMSHEDPUR.

(*Vide* paragraph 44 of the report.)

(*a*) The figures shown in previous report have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned, and not those actually adjusted during the year.



Total quantity of material inspected and charged on weight.

Total number of tests carried out and samples analysed.

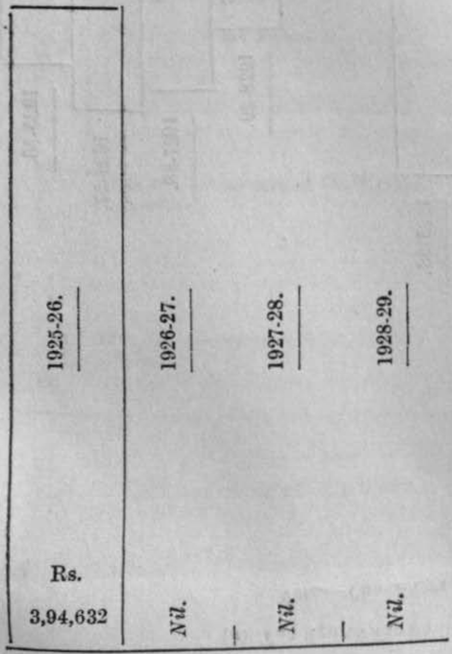
Total quantity of stores inspected and charged on value.

Total amount of fees earned.

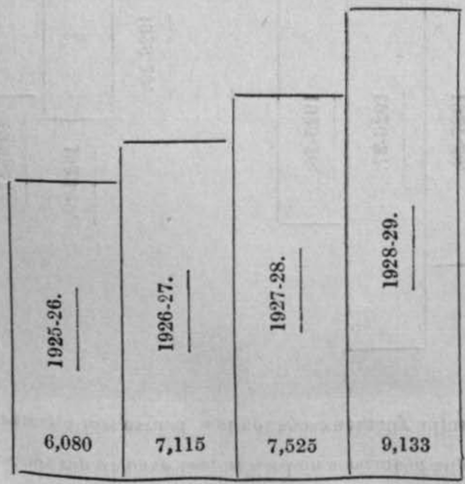
XI (*vii*).—Government Test House, Alipore, Calcutta.

(*Vide* paragraph 48 of the report.)

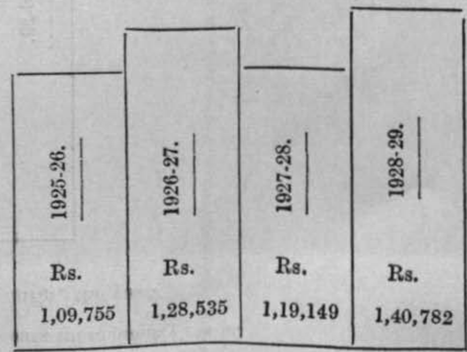
Note.—The diagrams represent fees earned, and not those actually adjusted during the year.



Total value of stores inspected.



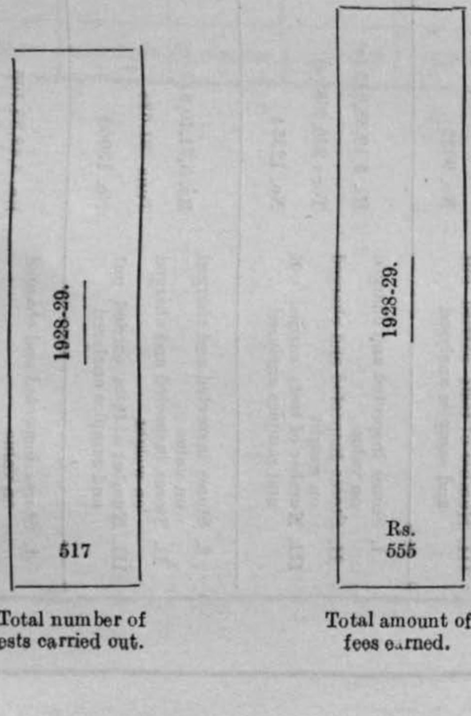
Total number of tests carried out.



Total amount of fees earned.

XI (*viii*).—Government Test House, Bombay.

(*Vide* paragraph 36 of the report.)



Total number of tests carried out.

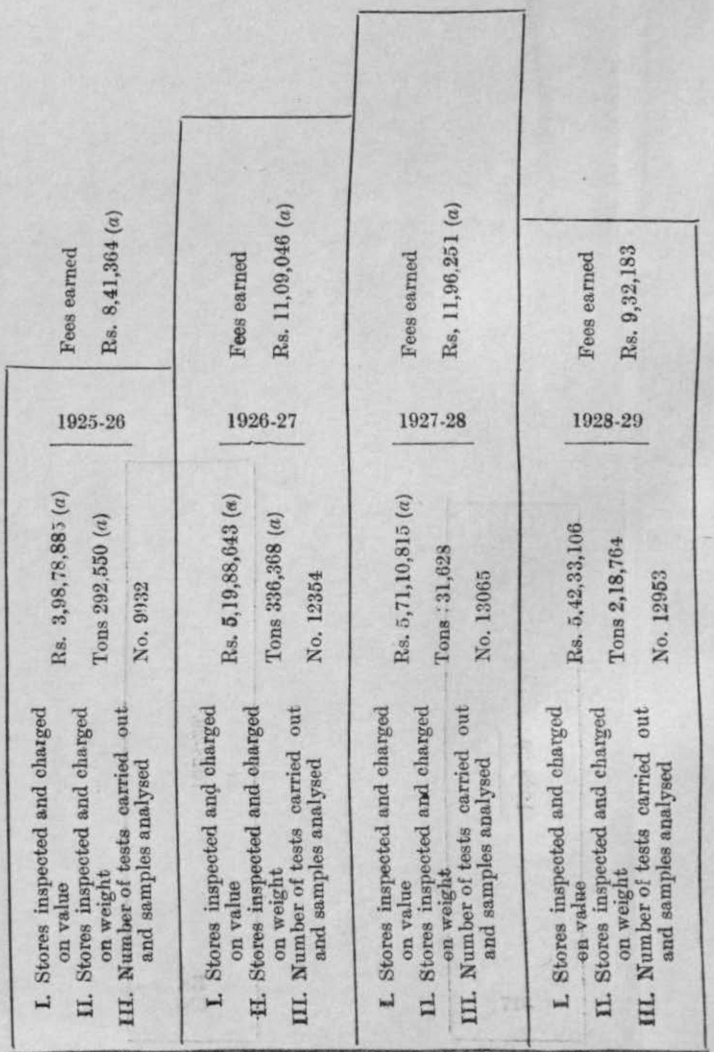
Total amount of fees earned.

XI (*ix*).—Abstract of Total work done in the Inspection Branch of the Indian Stores Department.

(*Vide* paragraph 36 of the report).

(*a*) The figures shewn in previous reports have been revised on account of adjustments subsequently made.

Note.—The diagrams represent fees earned and not those actually adjusted during the year.



APPENDIX XII.

Statement showing inspection work carried out for various authorities (material charged on value).

(Vide paragraph [illegible] of the Report).

Authorities on whose behalf stores were inspected.	Government Test House, Alipore.				Metallurgical Inspectorate, Tatanagar.				Calcutta Inspection Circle.				Bombay Inspection Circle.				Cawnpore Inspection Circle.				Karachi Inspection Agency.				Madras Inspection Branch.				Total Value of Stores Inspected and Charged on Value.			
	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I. Orders placed by the Indian Stores Department	3,94,632	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10,53,674	8,11,032	5,39,552	6,33,500	1,71,81,096	2,07,20,514	2,35,73,477	2,50,38,523
II. Orders placed by other Departments—																																
(1) Central Government Departments	..	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8,01,943	5,00,000	6,32,001	10,71,088
(2) Railways, State worked	..	..	..	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	..	..	..	1,59,40,358	2,06,69,510	2,36,98,526	1,91,94,526
(3) Railways, Company worked	..	..	..	..	..	..	[illegible]	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	..	..	..	..	..	..	[illegible]	..	..	..	..	54,77,440	98,04,483	76,40,977	81,27,260
(4) Railways, Indian States worked	..	..	..	..	..	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	..	..	..	..	..	..	[illegible]	..	..	..	..	1,95,791	1,46,326	1,67,470	40,618
(5) Provincial Governments	..	..	..	..	..	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	[illegible]	..	..	[illegible]	[illegible]	[illegible]	..	..	..	..	..	1,75,005	94,899	1,19,395	364
(6) Public bodies	..	..	..	..	..	..	..	..	[illegible]	..	[illegible]	[illegible]	[illegible]	..	..	..	..	..	..	..	..	..	[illegible]	..	..	..	..	..	96,184	..	5,94,489	1,240
(7) Private concerns and Indian States	..	..	..	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	..	..	..	[illegible]	..	..	..	..	..	[illegible]	[illegible]	..	..	..	..	..	11,068	52,911	6,84,480	7,59,487
Total	3,94,632	..	..	..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10,53,674	8,11,032	5,39,552	6,33,500	3,98,78,885	5,19,88,643	5,71,10,815	5,42,33,106

APPENDIX XII-A.

(Statement showing inspection work carried out for various authorities, which is charged on weight.

(*Vide* paragraph 36 of the Report).

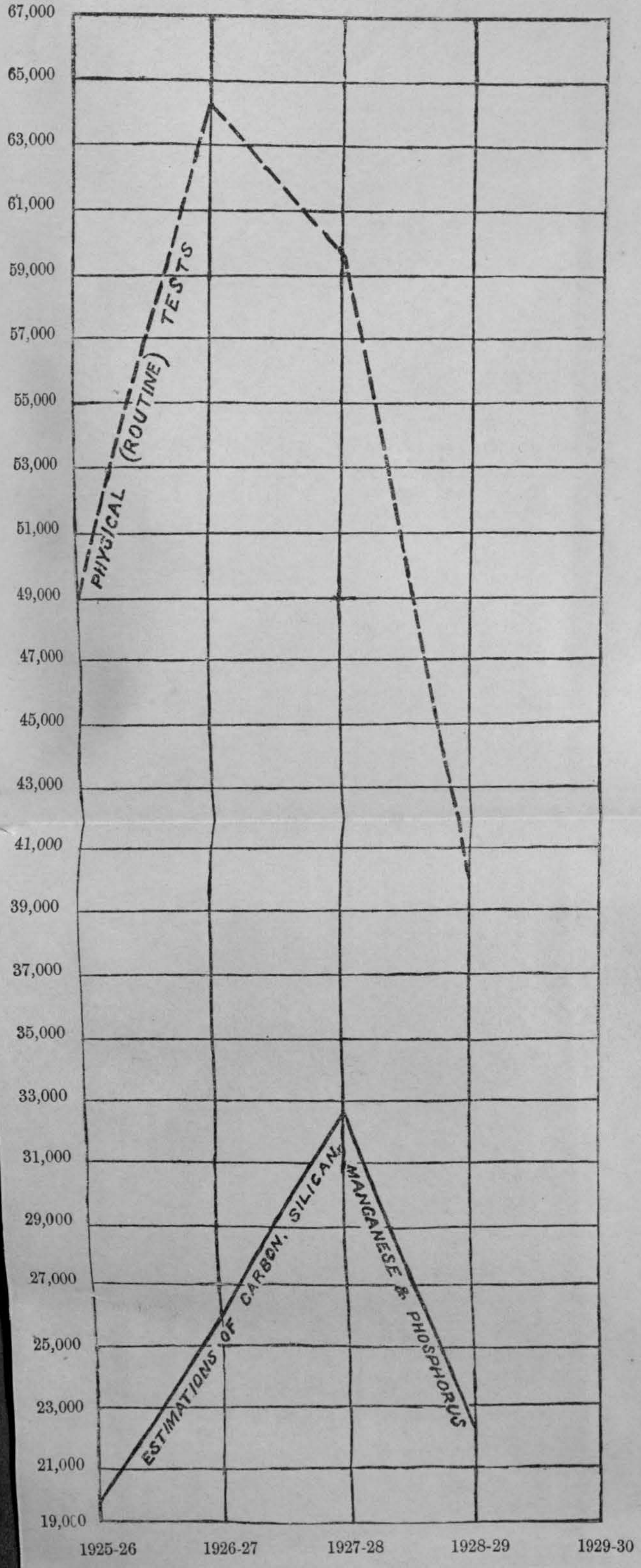
Authorities on whose behalf stores were inspected.	Metallurgical Inspectorate.				Calcutta Inspection Circle.	Bombay Inspection Circle.	Karachi Inspection Agency.	Total tonnage of stores inspected and charged on weight.			
	1925-26.	1926-27.	1927-28.	1928-29.	1928-29.	1928-29.	1928-29.	1925-26.	1926-27.	1927-28.	1928-29.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1. Central Government Departments .	771	672	1,841	2,145	..	..	..	771	672	1,841	2,145
2. Railways, State worked . . .	49,307	111,568	130,343	30,641	17,940	591	2,210	49,307	111,568	130,343	51,382
3. Railways, Company worked . .	70,187	48,592	59,899	57,598	20,229	..	..	70,187	48,592	59,899	77,827
4. Railways, Indian State worked .	1,516	..	..	9	..	..	..	1,516	..	..	9
5. Provincial Governments . .	..	..	..	..	..	..	..	..	..	..	..
6. Public bodies	..	..	..	..	..	..	..	..	..	..	..
7. Private concerns and Indian States .	170,769	175,536	139,545	85,856	1,545	..	..	170,769	175,536	139,545	87,401
Total .	292,550	336,368	331,628	176,249	39,714	591	2,210	292,550	336,368	331,628	218,764

1

APPENDIX XIII.

GRAPH SHOWING THE NUMBER OF ESTIMATIONS (DAILY STEEL ANALYSIS) AND PHYSICAL (ROUTINE) TESTS CARRIED OUT AT THE METALLURGICAL INSPECTORATE DURING THE YEARS 1925-26 TO 1928-29.

(*Vide paragraph 44 of the Report.*)



APPENDIX XIV.

Apparatus installed at the Metallurgical Inspectorate, Jamshedpur.

(*Vide* paragraph 47 of the Report.)

(The additions made during the year are shewn in italics).

Machinery Laboratory.

The Machine Shop is equipped with machinery and tools by means of which test pieces and experimental samples of any desired shape can be prepared. The Metallurgical Inspector is in a position to undertake the testing and investigation of any metallic materials of whatever size which may be submitted to him.

The following testing machines are available for mechanical tests :—

(1) A 50-ton vertical testing machine of single-lever type, for tensile, compression, bending and shear tests.

(2) A 10,000 lb. vertical testing machine for tensile tests on wires and on other material of small cross-section.

(3) A torsion testing machine for wire.

(4) Hardness testing machines for application of the Brinell hardness test :—

(*a*) One machine has a useful range of load of 0 to 4,000 kilogrammes.

(*b*) Another machine has a useful range of load of 5 to 50 kilogrammes. This is valuable in the case of small samples and thin materials such as strips or sheets, for detecting variations of hardness, etc.

(5) An impact testing machine of the Izod single-blow type, with a maximum striking energy of 120 foot-pounds.

(6) A mirror-extensometer, by means of which the extension of a tensile test-piece, while under load, can be measured with an accuracy of about 1/1,25,000th inch. This enables the elastic limit, which for many purposes is the most important mechanical property of a ductile metal, to be determined with great accuracy.

(7) A 50-ton calibrating box for testing the accuracy of testing machines up to loads of 50 tons in either tension or compression. By this means any deterioration of the main testing machine can be detected and corrections made for the error; and as the box is portable, different testing machines can be compared with one another.

(8) A transverse testing machine for measuring the breaking load and deflection of cast iron bars under transverse load.

In addition, arrangements can usually be made with the Tata Iron and Steel Company, Limited, or the Jamshedpur Technical Institute, for the use of the following machines :—

(9) A falling weight test machine capable of delivering blows up to 35 foot tons.

(10) A 100-ton tensile and compression testing machine (horizontal).

(11) Impact testing machines of the Charpy single blow type (chiefly used on the Continent of Europe) with striking energies equivalent to about 220 and 1,450 foot pounds respectively.

(12) A Sankey alternating bend test machine.

Electrical Equipment.

1. Potentiometer, Double Switch Bridge, Universal shunt, Darsonval Galvanometer with lamp and scale outfit, Resistances standardized by the National Physical Laboratory and Standard Weston Cell by means of which resistances, including the resistance of high conductivity of copper wire and cables, can be accurately measured and voltmeters, ammeters, and standard resistances can be accurately calibrated.

2. *A cable testing outfit for insulation and capacity tests.*

3. *Two Electric Muffles, two Electric hot plates and an Electric Still and Condenser.*

4. A platinum resistance thermometer with whipple Indicator made by the Cambridge and Paul Instrument Co., suitable for measuring temperature up to 1,200°C and for calibrating pyrometers of other types.

APPENDIX XIV—*contd.*

Apparatus installed at the Metallurgical Inspectorate, Jamshedpur—concld.

5. Two pyrometers for measuring temperatures below 1,400°C.

6. Apparatus with Platinum Electrodes for electrolytic analysis with rotating electrodes.

Miscellaneous.

1. A large latest type Reichert Metallographic Microscope with Photo camera for examining and photographing the structure of metals. This apparatus, equipped with a series of objectives having focal lengths ranging from 100 mm. micropolar to 2 mm. apochromat, is equally suited for low and high power microphotography.

2. A metallographic microscope for routine work with objectives having focal lengths ranging from 2″ to 4 mm.

3. A travelling microscope for the accurate measurement of small diameters.

4. Two gas-fired furnaces for experimental heat-treatment of metals—one being provided with a device for pre-heated air supply so that high temperatures can be obtained.

5. A photographic camera with portable stand and sliding scale.

6. *Schilling's Profilometer.*

APPENDIX XV.

The Government Test House, Calcutta, is equipped with the apparatus mentioned below, by means of which tests can be carried out for Government and Public Departments and private bodies at a small cha ge. The additions made during the year are shewn in italics.

(*Vide* paragraph 55 of the report.)

I.—PHYSICIAL SECTION.

Testing machines and apparatus.

1. *Engineering Sub-Section.*

1. One 100-ton Buckton horizontal testing machine, hydraulically controlled, for tensile, compression and transverse bend testing. This machine takes test-pieces up to a maximum size of 10 feet. It is suitable for steel and metal bars, steel wire ropes, chains, railway couplings stone and concrete blocks, bricks, etc.

2. One 10-ton Avery testing machine for tensile, compression and transverse bend testing.

3. One 10,000 lbs. Avery universal testing machine for tensile, compression, transverse and torsion testing.

4. One Ewing extensometer complete with marking off jig for test-pieces.

5. One 12″ Newall measuring machine.

6. One 120 foot-lbs. Avery Izod type impact testing machine for carrying out notched bar tests on metals.

7. One Buckton double-sided cold and temper bend testing machine.

8. One Avery fatigue testing machine. This machine is of the rotating bar type in which the test specimens are subjected to a uniform bending moment while revolving about their own axes.

9. One 5 foot-ton Avery impact testing machine for carrying out impact tests on railway couplings and draw-gears.

10. One Thurston oil testing machine for testing oils under practical conditions of use.

11. One hydraulic testing machine for testing stoneware and other pipes up to 18″ in diameter and 3′-0″ in length.

12. One Bailey hydraulic testing machine for carrying out porosity and pressure tests on cocks, valves, etc.

13. One Brotherhood pressure gauge testing apparatus, 0-6,000 lbs. per sq. inch.

14. Budenberg gauge tests sets, one suitable for pressures of 0-2,000 lbs. per sq. inch and another for pressures of 0-5 tons per sq. inch.

15. One "Compactum" hydraulic pressure test-pump, 15,000 lbs. per sq. inch. capacity, for general hydraulic pressure tests.

16. One Brotherhood vacuum gauge testing apparatus.

17. Plant and apparatus for testing vacuum brake rubber fittings.

18. One vacuum gauge testing apparatus with mercury columns.

19. One 20-ton dynamometer (Salters).

20. One 0-50-ton Amsler standardizing box for calibrating testing machines.

21. One Avery 10 cwt. platform weighing machine.

22. One microscope.

23. One Vickers patent diamond hardness testing machine.

24. One Herbert automatic file testing machine for testing the cutting properties and durability of workshop files.

2. *Machine shop tools.*

1. One 6″ centres S. S. and S. C. heavy duty Buckton lathe.

2. One 4″ centres S. S. and S. C. Holbrook lathe.

APPENDIX XV—*contd.*

The Government Test House, Calcutta, is equipped with the apparatus mentioned below, by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—contd.

3. One Buckton test-piece preparing machine for shaping flat test-pieces for the determination of tensile strength.
4. One Butler shaping and slotting machine.
5. One machine for polishing metal specimens for micro-examination.
6. One Smith and Conventry sensitive drilling machine.
7. One band saw.
8. One power hack saw.
9. One emery grinder.
10. One light motor grinder.
11. One grindstone, treadle driven.
12. One end-runner paint mill.
13. One cone paint mill.

3. *Cement testing sub-section.*

1. One Adie tensile testing machine.
2. One Smith Edward testing machine.
3. Vicat needle setting time testing sets.
4. Le Chatelier soundness testing sets.
5. One Ro-tap sieving machine.
6. Ice-chest for taking setting times under various temperature conditions.
7. One thermograph.
8. Dry and wet bulb thermometers.
9. One setting time clock.
10 Maturing tanks, damp boxes, moulds, scales, balances, etc.

4. *Road Metals Testing Sub-section.*

1. One Deval type 4-cylinder attrition testing machine.
2. One ball mill.
3. One Dorry type abrasion tester.

5. *Textile Testing Sub-Section.*

1. One Goodbrand-lea tensile testing machine, 0-500 lbs.
2. One Goodbrand yarn testing machine, 0-5 lbs.
3. One Dronsfield wrap reel.
4. One 12" Goodbrand twist tester.
5. One Goodbrand fabric 0-1,000 lbs. testing machine.
6. One Avery cloth fabric testing machine, 0-1,200 lbs.
7. One Casartelli microscope cloth counting glass.
8. One Goodbrand conditioning apparatus with balance and wire cage, etc.
9. One chemical balance.
10. *One yarn examining machine.*

APPENDIX XV—*contd.*

The Government Test House, Calcutta, is equipped with the apparatus mentioned below, by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—contd.

6. *Electrical testing sub-section.*

1. One Naldar Bros. and Thomson ohmmeter.

2. One Elliot Brothers Wheatstone bridge with 6-volt portable battery.

3. One complete set of Pritchett and Gold and E. P. S. Co., Ltd., storage battery, 250 volts, consisting of 135, S5 type cells, capacity 80 ampere-hours with plug board, switch board and instruments.

4. One Elliot Brothers D. C. ammeter with four range 1·5-600 amperes.

5. One Elliot Brothers A. C. Ammeter 600 amperes with single phase transformer.

6. One Weston A. C. double range ammeter 5 and 10 amperes.

7. One Weston A. C. double range ammeter 1 and 2 ampres.

8. One Elliot Bros. A. C. and D. C. double range voltmeter 300 and 600 volts.

9. One Elliot Bros. D. C. voltmeter 600 volts.

10. One Weston accumulator testing voltmeter.

11. One Weston three phase wattmeter, 1·5 killowatts.

12. One Weston single phase double range wattmeter 150 and 300 wats.

13. Two Weston current transformer (open centre 1200-5 amperes).

14. Two Weston potential transformers (6,600 or 3,300-110 volts).

15. One portable frequency meter.

16. One Everett-Edgcumbe standard photometer bench.

17. One 6″ Lawrence & Mayo anemometer.

18. Potentiometer complete with accessories.

19. Kelvin double bridge.

20. One Everett-Edgcumbe cube photometer for spherical candle-power tests on electric lamps. This apparatus will be used in conjunction with the photometer bench, item 16.

21. One Weston model I, D. C. ammeter, 0-1 amp range.

22. One Weston model I, D. C. ammeter, 0-15 amps range.

23. One Weston model I, D. C. volt-meter, 0-3 volts range.

24. One Weston model I, D. C. double-range voltmeter, 0-75-150 volts, with multiplier.

25. One Weston dynamometer type double-range volt-meter 0-150-300 volts range, with multiplier.

26. Complete range of N. P. L. spherical candle-power sub-standard vacuum type electric lamps for use with the cube photometer, item 20.

7. *Miscellaneous.*

1. One copper oven for determining the moisture contents of bricks, concrete blocks, etc.

2. One portable forge.

3. Anvils, vices, etc.

II.—CHEMICAL SECTION.

8. *General laboratory.*

1. Two motor-driven gas compressors.

2. One motor driven water pump set.

APPENDIX XV—*contd.*

The Government Test House, Calcutta, is equipped with the apparatus mentioned below, by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—contd.

3. One carbon disulphide distillation apparatus.

4. One Cambridge and Paul thermo-couple type pyrometer with three spare tubes containing the couple.

5. One Cambridge and Paul optical pyrometer, polarising type.

6. Two muffle furnaces.

7. Two combustion furnaces for organic analyses.

8. One centrifugal machine, holding 4 tubes of 100 c.c. each.

9. Three bomb calorimeter sets for determination of the calorific value of coal and other fuels.

10. One electric furnace by Brady and Martin, special type for determining the amount of volatile matter evolved from coal at different temperatures.

11. One Electrical resistance thermometer.

12. One Hutchinson tar tester for determination of viscosity of coal-tar.

13. Accessories for Fleming's carbon combustion apparatus (used in steel analysis) consisting of phosphoric anhydride jar, zinc, tower, mercury gauge, mercury valve, gas washing bottles, reducing valve, silica tube, etc.

14. One B. T. L. penetrometer.

15. One melting point determination apparatus, ring and ball method.

16. One Naldar Brothers volt-ammeter testing set (with instrument ranges up to 600 volts and 660 amperes).

17. One G. E. C. ammeter 30 amperes.

18. Two 6-volt and one 12-volt batteries.

19. Twelve chemical balances.

20. Two rough balances.

21. One Westphal balance.

22. One microscope.

23. Four ovens.

24. One vacuum pump.

25. One combined still and steam oven set.

26. One still (for distilled water).

27. One stream-line filter.

28. Apparatus for determining the loss on heating of bituminous materials.

29. Apparatus for the dermination of the ductility of bituminous materials.

30. One 6-volt battery.

31. One chemical balance.

32. One rough balance, Beranger's principle.

33. One small Parr type sodium peroxide bomb.

34. One electric organic combustion furnace.

35. One laboratory paint-grinding roller mill.

36. One electrically driven Centrifugal machine.

37. Apparatus for testing the flexibility and adhesive powers of varnishes.

38. A. S. T. M. pattern apparatus for the determination of the softening point of pitch.

Miscellaneous—Water-baths sand-baths, air-ovens, ice-chest, etc. etc.

APPENDIX XV—*concld.*

The Government Test House, Calcutta, is equipped with the apparatus mentione c below, by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—concld.

9. *Oil testing sub-section.*

1. One Zeiss Butyro-Refractometer.
2. One Herschel emulsifier, motor driven.
3. One Dubesq calorimeter.
4. One Deely friction machine for determining the co-efficient of static friction between lubricated surfaces.
5. Eight viscometers, Redwood's ordinary pattern.
6. One viscometer Redwood's electrically heated.
7. One viscometer, Redwood's admiralty pattern, for determining the viscosity of oil fuels.
8. Four Pensky-Martens closed flash point apparatus (high flash).
9. One Pensky-Martens closed flash point apparatus.
10. Two Abel-Pensky flash point apparatus (low flash).
11. One Abel's flash point apparatus (low flash).
12. One Archbutt vaporimeter for determining the volatility of oils used for lubricating steam engine cylinders.
13. Two Conradson carbon residue apparatus.
14. One Conradson carbon residue apparatus.
15. One cloud and pour test apparatus capable of holding six test-jars.
16. Two cloud and pour test apparatus capable of holding one test-jar only.
17. One standard distillation apparatus with metal condenser for kerosene.
18. One distillation apparatus for petrol (Dunston and Kewley).
19. One standard distillation apparatus with screen, etc., for petrol, conforming to the standard laid down by the I. P. T.
20. One apparatus for estimation of total sulphur in gasolene as adopted by the I. P. T.
21. One Lovibond tintometer.
22, Six Hinks's single wick table lamps for kerosene burning tests.
23. Four chemical balances
24. Two water-baths,
25. One still.
26. One geyser.
27. One hot air-even.
28. One apparatus, Dean and Stark's for determination of water in fuel oils.
29. One apparatus for determining melting point of paraffin wax.
30. One circular copper water bath with burners.
31. Machie sludge-test apparatus for transformer oils,
32. *Two chemical balances.*
33. *One physical balance.*
34. *One ice-chest.*

APPENDIX XVI.

(*Vide* paragraph 39 of the Report.)

The Government Test House, Bombay, is equipped with the apparatus mentioned below by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The addiions made during the year are shewn in italics.

I.—PHYSICAL SECTION.

TESTING MACHINE AND APPARATUS.

1. *Engineering sub-section.*

1. One Jackman type brinell hardness testing machine.

2. One Budenberg combined dead weight tester and screw press for testing and calibrating two pressure gauges at a time up to 400 lbs. per square inch.

3. One Vacuum gauge test pump, with standard mercurial column.

4. One Avery's wire twisting machine.

5. One Boiler test pump.

6. One bench drilling machine.

2. *Cement testing sub-section.*

1. One Adie's cement briquette tensile testing machine, single lever steelyard type, of 1,200 lbs. capacity.

2. One damp box teakwood 24″ × 24″ × 9″ felt covered with two perforated shelves.

3. Three teakwood zinc lined maturing tanks.

4. Three aerating boxes teakwood, zinc lined.

5. One Admiralty marine clock.

6. One chemical balance for fineness test.

7. Two Vicat type cement setting time apparatus, dash pot pattern.

8. One Le Chatelier test copper boiler for cement soundness tests, with corrugated tray to hold 12 moulds.

9. One fineness testing sieve, 76 mesh with brass receiver and cover.

10. One fineness testing sieve, 180 mesh with brass receiver and cover.

11. Sixty tensile briquette gun-metal moulds for 1″ briquettes and thumb screw s and steel base-plates.

12. Six Le Chatelier brass moulds with plates and weights.

13. Six Vicat moulds with base-plates.

14. Two standard steel spatulas.

15. Four standard gauging trowels.

16. One balance with brass scoop and pan to weigh up to 4 lbs.

17. Six glass burettes.

3. *Textile testing sub-section.*

1. One Goodbrand lea Scales complete with one set of weights.

2. One Goodbrand and Co.'s yarn assorting balance, type H.

3. One Goodbrand and Co.'s yarn twist tester, No. 2.

4. One Dronsfield wrap reel, No. 70.

5. One Avery new design yarn scale fitted with chart, automatic, including underload and overload.

6. One yarn lea tester, No. 12, to test up to 300 lbs. complete with motor.

7. One Goodbrand yarn examining machine, No. 3.

APPENDIX XVI—*contd.*

The Government Test House, Bombay, is equipped with the apparatus mentioned below by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—contd.

8. One Avery counter scale No. 502, 14 lbs. complete with set of weights.

9. One set of Avery grain weights, 240 grains to ½ grain.

10. One hankstand, umbrella pattern.

11. One No. 118 Avery counter platform weigher.

12. One testing frame for paulins.

13. One Goodbrand yarn and cloth quadrant "D" type.

14. Goodbrand patent cloth testing machine fitted with tension motion and motor for driving, having a testing range of 0-1,000 lbs.

15. One Goodbrand patent single thread tester with adjustable grip and dash-pot contrivance, having a testing range up to 4 lbs.

16. One Knowle's patent yarn balance to weigh 4s.-40s..

17. One hankstand.

18. One yarn examining machine, No. 1.

19. One Goodbrand Mason's hygrometer.

20. One hygrograph.

21. One conditioning oven with scale pans and weight box 1 gram to 500 grams.

22. One Goodbrand yarn stretch tester.

23. Casartelli microscope cloth counting glass No. 14755 reading up to 3.

4. *Electrical testing sub-section.*

1. One combined Elliot moving coil type century testing set 5 range portable type, consisting of voltmeter ammeter and suitable shunt to read up to 600 amperes in current side.

2. One combined Elliot moving coil A. C. Dynamometer type together with a wattmeter in the same case.

3. One Bridge Megger testing set, 10,00 volts, complete with resistance box.

4. One Post Office type Wheatstone bridge.

5. Hartridge Williams Oxililluminater.

6. 8 volts accumulator for above.

II.—CHEMICAL SECTION.

5. *General laboratory.*

1. One microscope by Swift with electric light arrangement and battery.

2. One chemical balance sensitive to 1 mgm. with one set of weights from 1 to 500 grams.

3. One analytical balance sensitive to 1 mgm. with one set of platinised weights from ·001 to 100 grams.

4. One set of six Twaddle's hydrometers.

5. One Stage micrometer.

6. One copper boiling box.

7. Four porcelain dye pots.

8. One holophane daylight unit No. 10.

9. One padeometer.

10. One Washerman's iron (electrically heated).

11. One hot plate (electrically heated).

APPENDIX XVI—*concld.*

The Government Test House, Bombay, is equipped with the apparatus mentioned below by means of which tests can be carried out for Government and Public Departments and private bodies at a small charge. The additions made during the year are shewn in italics—concld.

12. One water bath.

13. One hot water oven.

14. One hot air drying oven.

15. One Lovibonds tintometer with complete set of standard glasses.

16. Mechanical stage microscope Swifts patent. Transferred from the Bombay Inspection Circle.

17. Stop watch. Transferred from the Bombay Inspection Circle.

APPENDIX XVII.

(*Vide* paragraph 55 of the Report.)

Statement showing the various articles tested at Government Test House, Calcutta, during the year 1928-29.

Serial No.	Articles.	Serial No.	Articles.
1	Acids.	43	Copper, bars, ingots, plates, rods.
2	Alumina ferric.	44	Copper Sulphate.
3	Aluminium.	45	Cordages.
4	Alumino-ferric.	46	Cotton, absorbent.
5	Ammeter and voltmeter (combined).	47	Cupro-nickel.
6	Ammonium sulphate.	48	Deposit, Cylinder.
7	Anchors, rail.	49	Disinfectants.
8	Antimony.	50	Earth.
9	Apparatus, flash-point.	51	Efflorescence.
10	Asbestos.	52	Electrical fittings.
11	Asphalt.	53	Fabrics, cotton.
12	Axle guards.	54	Fabrics, woollen.
13	Badges, metallic.	55	Fans and regulators.
14	Bauxite.	56	Fibres, packing.
15	Beltings.	57	Fish plates.
16	Benzol.	58	Flour.
17	Bitumen.	59	Flux.
18	Blacking.	60	Gauges, pressure.
19	Blood meal.	61	Gauges, rail.
20	Bolts and nuts.	62	Gauges, wire.
21	Borax.	63	Gear wheels.
22	Brass bars, plates, tubes.	64	Glue.
23	Bricks.	65	Gold-leaf.
24	Buttons, gilt.	66	Graphite.
25	Cables.	67	Grease.
26	Cables, electric.	68	Gun-metal.
27	Calcium carbide.	69	Haematite.
28	Candles, wax.	70	Hammers, steel.
29	Canvas.	71	Hessians.
30	Carbon tetrachloride.	72	Hooks, drawbar.
31	Caustic potash.	73	Hooks, swivel.
32	Cement.	74	Hoops, steel mild.
33	Chains.	75	Hose, canvas.
34	Chalk.	76	Ink.
35	Chemicals.	77	Iron angles, bars, plates, rods.
36	Cinder.	78	Jacks, hydraulic.
37	Clay.	79	Jacks, lifting.
38	Coal.	80	Kaolin.
39	Coal tar.	81	Keys.
40	Coke.	82	Knives.
41	Compositions, boiler.	83	Lac.
42	Concrete blocks, cubes & cylinders.	84	Laces, leather.

APPENDIX XVII—*concld.*

(*Vide* paragraph 55 of the Report).

Statement showing the various articles tested at Government Test House, Calcutta, during the year 1928-29—concld.

Serial No.	Articles.	Serial No.	Articles.
85	Lamps, electric.	126	Screw couplings.
86	Lamps, Pyle.	127	Seeds, castor.
87	Lead.	128	Shackles, drawbar.
88	Leather.	129	Shellac.
89	Lime.	130	Sheets, G. I. corrugated.
90	Mercury.	131	Sheets, G. I. Plain.
91	Metal, antifriction.	132	Sisal bagasse.
92	Metal, gilding.	133	Slag from furnace.
93	Metal, type.	134	Sleepers, steel.
94	Meters, electric.	135	Soap.
95	Minerals.	136	Soil.
96	Motors, D. C.	137	Solder.
97	Oil Cakes.	138	Spirits.
98	Oils, animal.	139	Springs, bolster.
99	Oils, creosote.	140	Springs, coil.
100	Oils, fish.	141	Springs. laminated.
101	Oils, fuel.	142	Starch
102	Oils, kerosene.	143	Steel angles, bars, plates, rods.
103	Oils, lubricating.	144	Stone.
104	Oils, vegetable.	145	Straps.
105	Padlocks.	146	Tallow.
106	Paints and pigments.	147	Tar.
107	Paper.	148	Thermometers.
108	Pasteboards.	149	Threads.
109	Petrol.	150	Tiles.
110	Phosphor, bronze.	151	Tin.
111	Pipes, G. I.	152	Turpentine.
112	Pipes, steel.	153	Twines.
113	Pipes, stoneware.	154	Unipivot Test-set.
114	Pitch.	155	Vacuum Brake fittings.
115	Polish, French.	156	Varnishes.
116	Polish, metal.	157	Voltmeters.
117	Putty.	158	Water.
118	Ropes, metallic.	159	Wax.
119	Ropes, non-metallic.	160	Wax, sealing.
120	Sac elements.	161	Web-cleaner.
121	Sajee matee.	162	Wire gauge.
122	Sand.	163	Wires, brass, copper, iron and steel.
123	Scales from steel beams.	164	Yarns.
124	Scalpel, surgical.	165	Zinc ingots, plates, sheets.
125	Scissors.		

APPENDIX XVIII.

(*Vide* paragraph 39 of the Report).

Statement showing the various articles tested at the Government Test House, Bombay, during the year 1928-29.

Serial No.	Articles.
1	Aluminium sulphate.
2	Canvas Flax.
3	Cloth, cotton (physical and dye tests).
4	Cloth, woollen (physical and dye tests).
5	Disinfectants (Chemical tests).
6	Galvanizing.
7	Newars, cotton.
8	Metals (for hardness tests).
9	Oil vegetable.
10	Oils single and double boiled.
11	Putties, cotton
12	Ropes cotton (for particulars only).
13	Rubber goods.
14	Sewing thread.
15	Solder.
16	Yarn cotton.
17	Yarn, woollen.

INDEX

PARAS.

PARAS.

MGIPC—M—VIII-1-39—9-8-29—500.